VOL. XXXVIII No. 8 AUGUST 1953

MECCANO MAGAZINE

CHAIN CABLE MAKING

1/-

NEW

DINKY TOYS

TRADE MARK REGD.

Ready during August

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DINKY TOYS

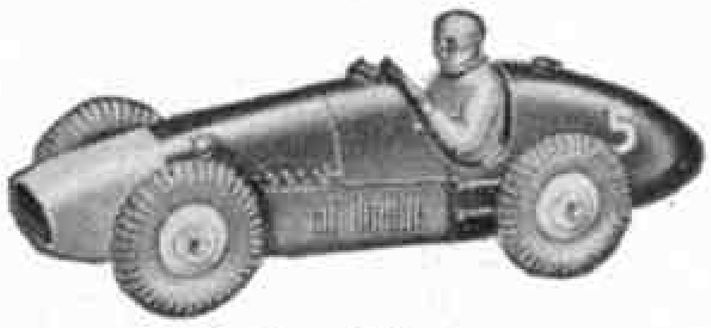
TRADE MARK REGD.

No. 23n
Maserati Racing Car
Length 3¾ in. **2/8**

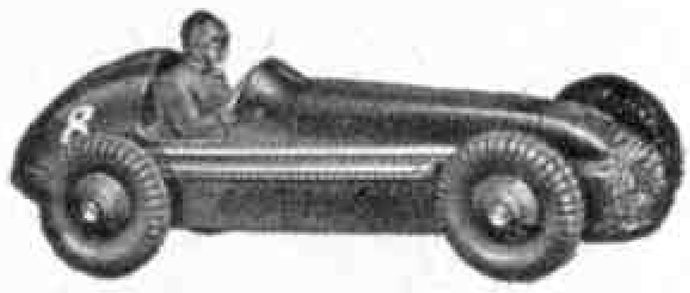
No. 23j
H.W.M. Racing Car
Length 3⅞ in. **2/11**

No. 23g
Cooper-Bristol Racing Car
Length 3½ in. **2/8**

No. 140a
Austin 'Atlantic' Convertible
Length 3¼ in. **2/11**

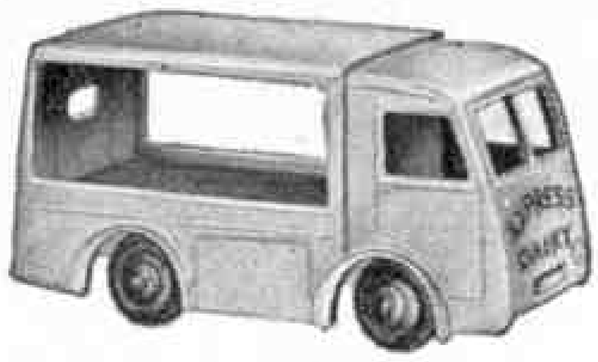


No. 23h
Ferrari Racing Car
Length 4 in. **2/11**

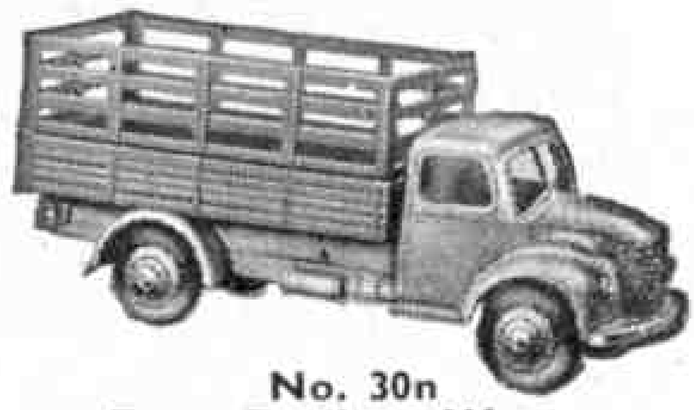


No. 23f
Alfa Romeo Racing Car
Length 4 in. **2/11**

No. 25v
Refuse Wagon
Length 4½ in. **6/1**



No. 30v
Electric Dairy Van
Length 3⅜ in. **3/6**

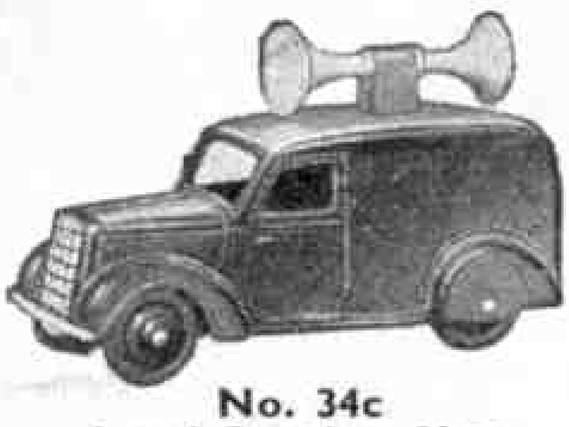


No. 30n
Farm Produce Wagon
Length 4¼ in. **3/10**

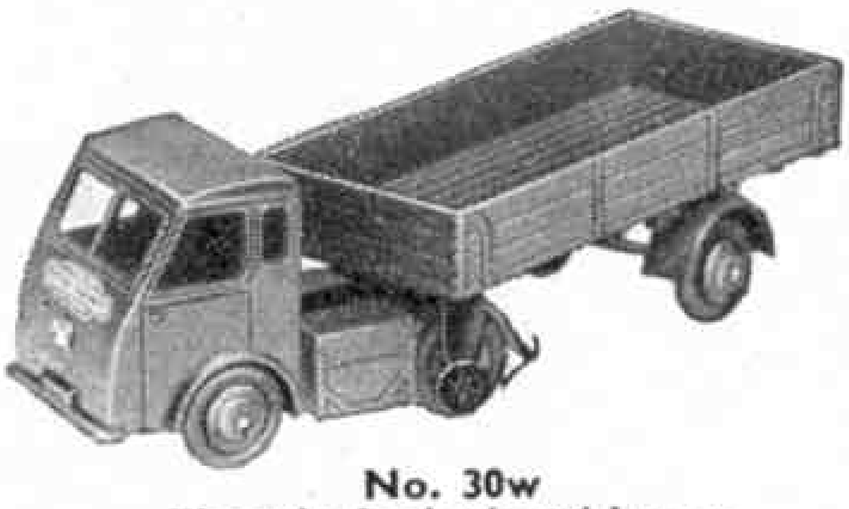
No. 40j
Austin Somerset Saloon
Length 3½ in. **2/4**

No. 40a
Riley Saloon
Length 3½ in. **2/4**

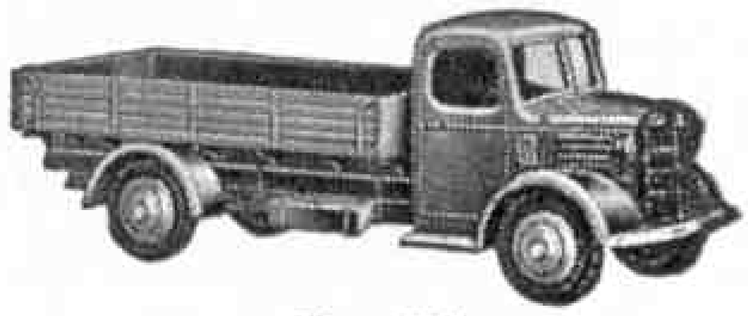
No. 40g
Morris Oxford Saloon
Length 3⅛ in. **2/4**



No. 34c
Loud Speaker Van
Length 3⅛ in. **2/3**



No. 30w
Electric Articulated Lorry
Length 5¼ in. **4/3**



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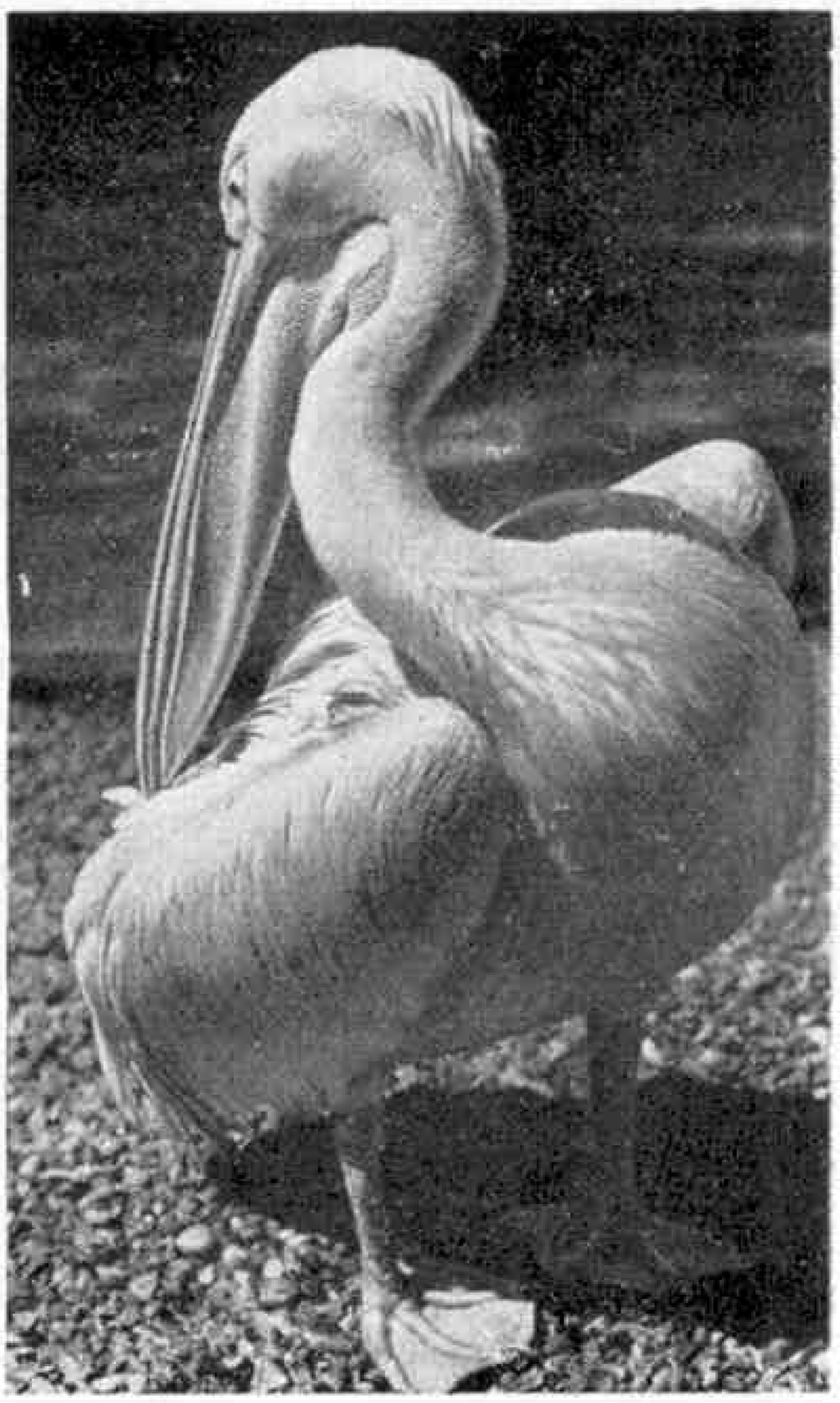

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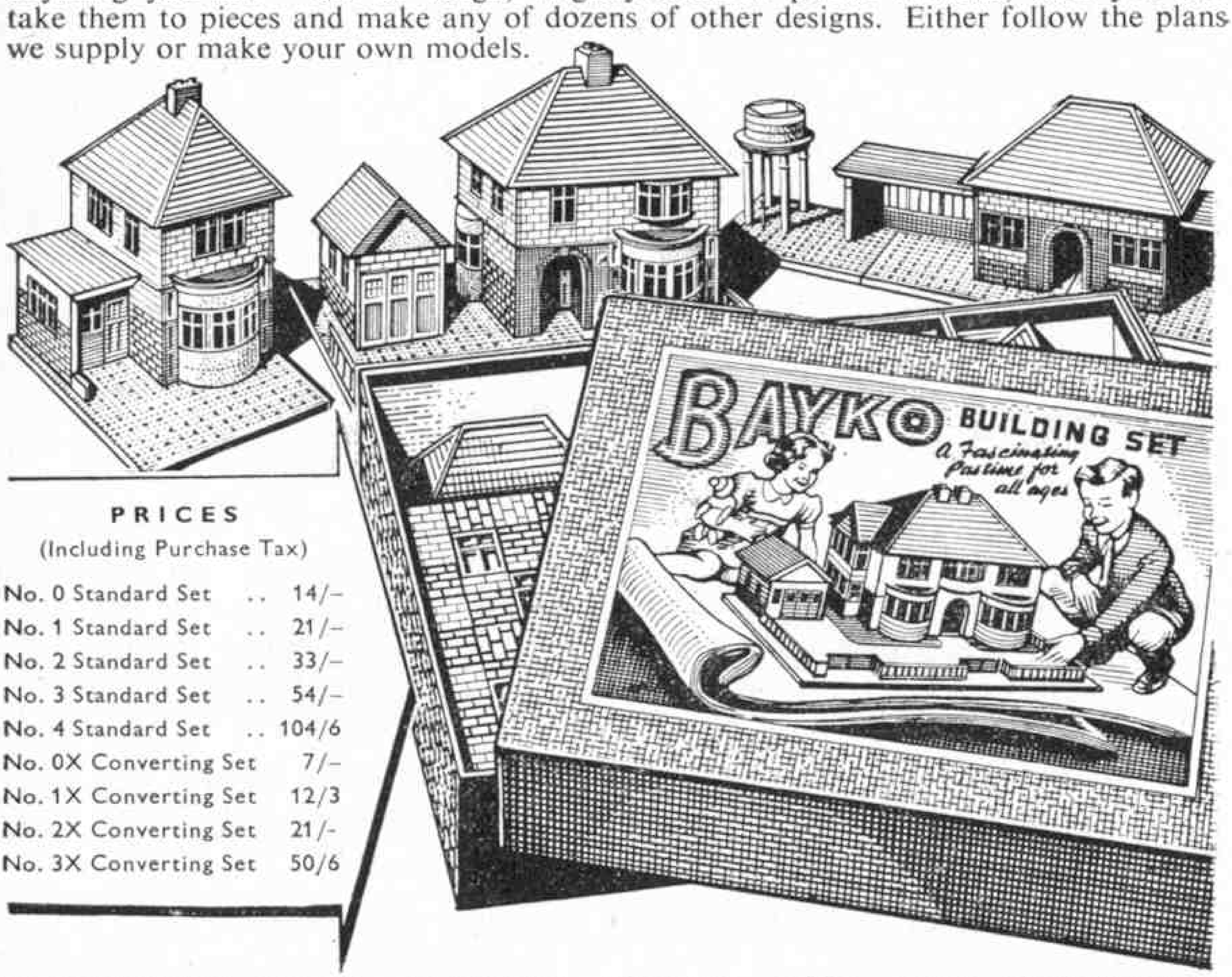

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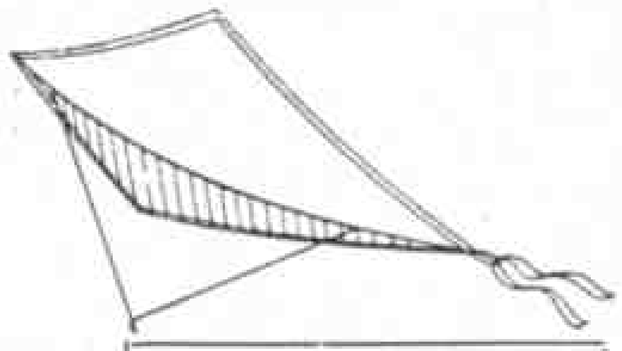

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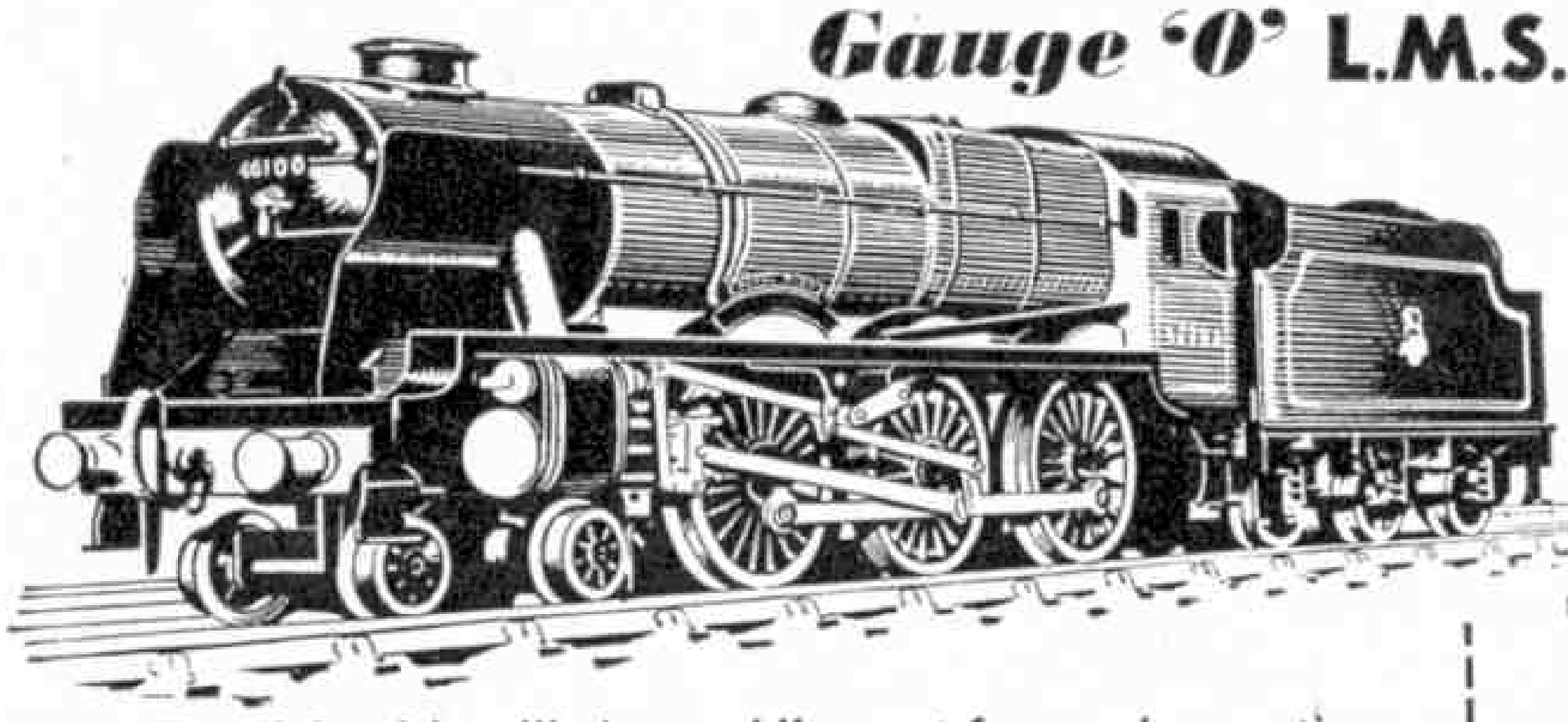

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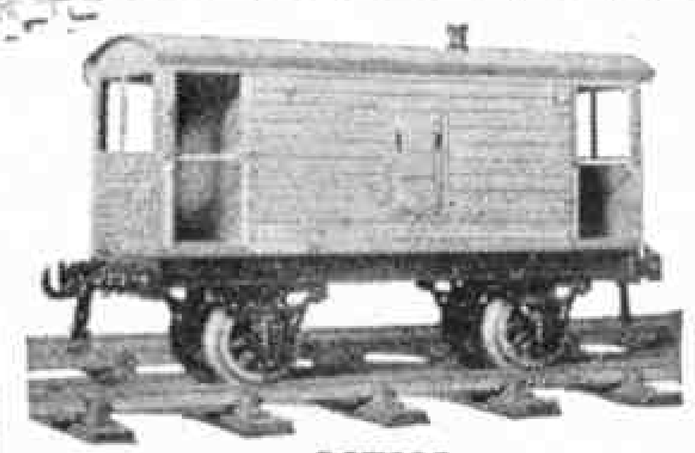

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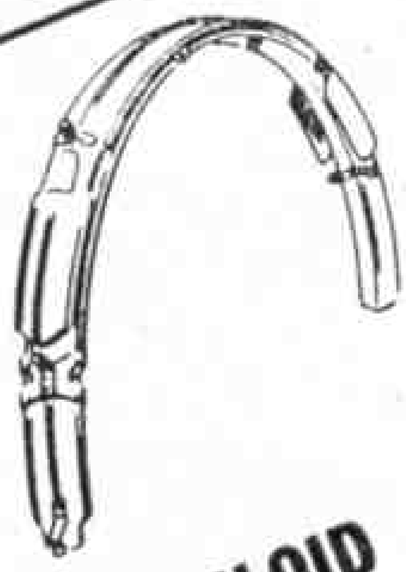

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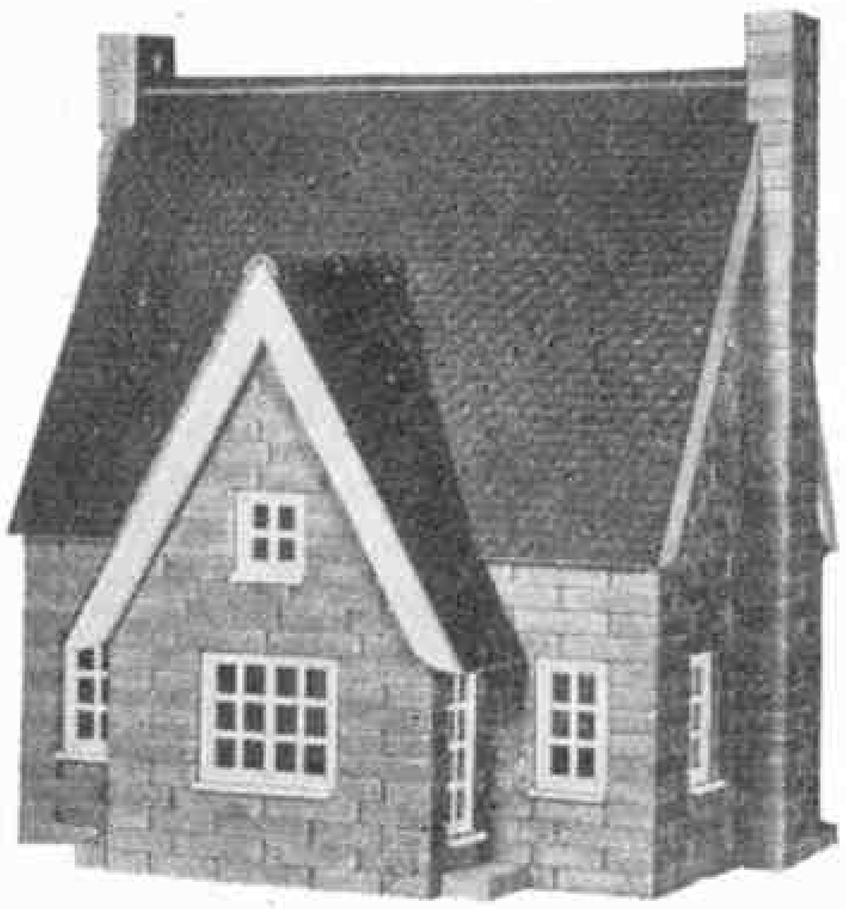

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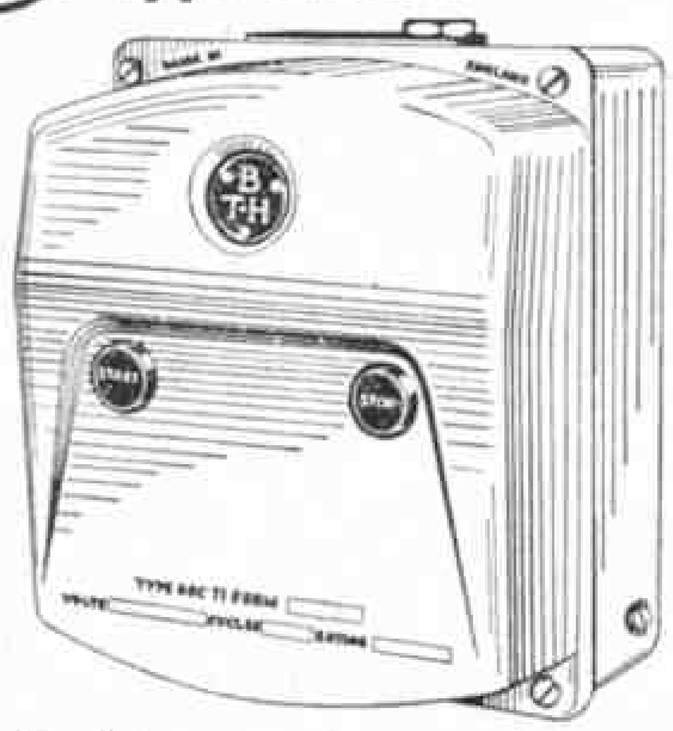

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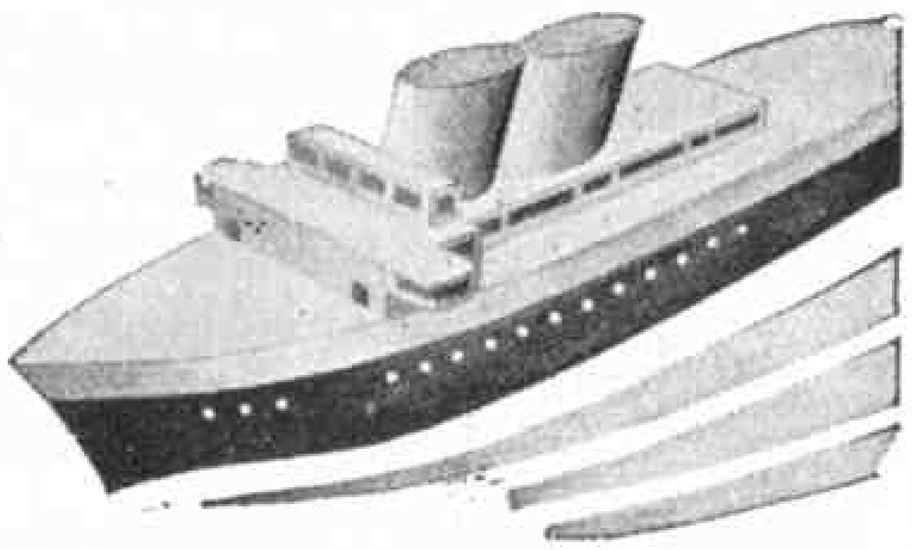

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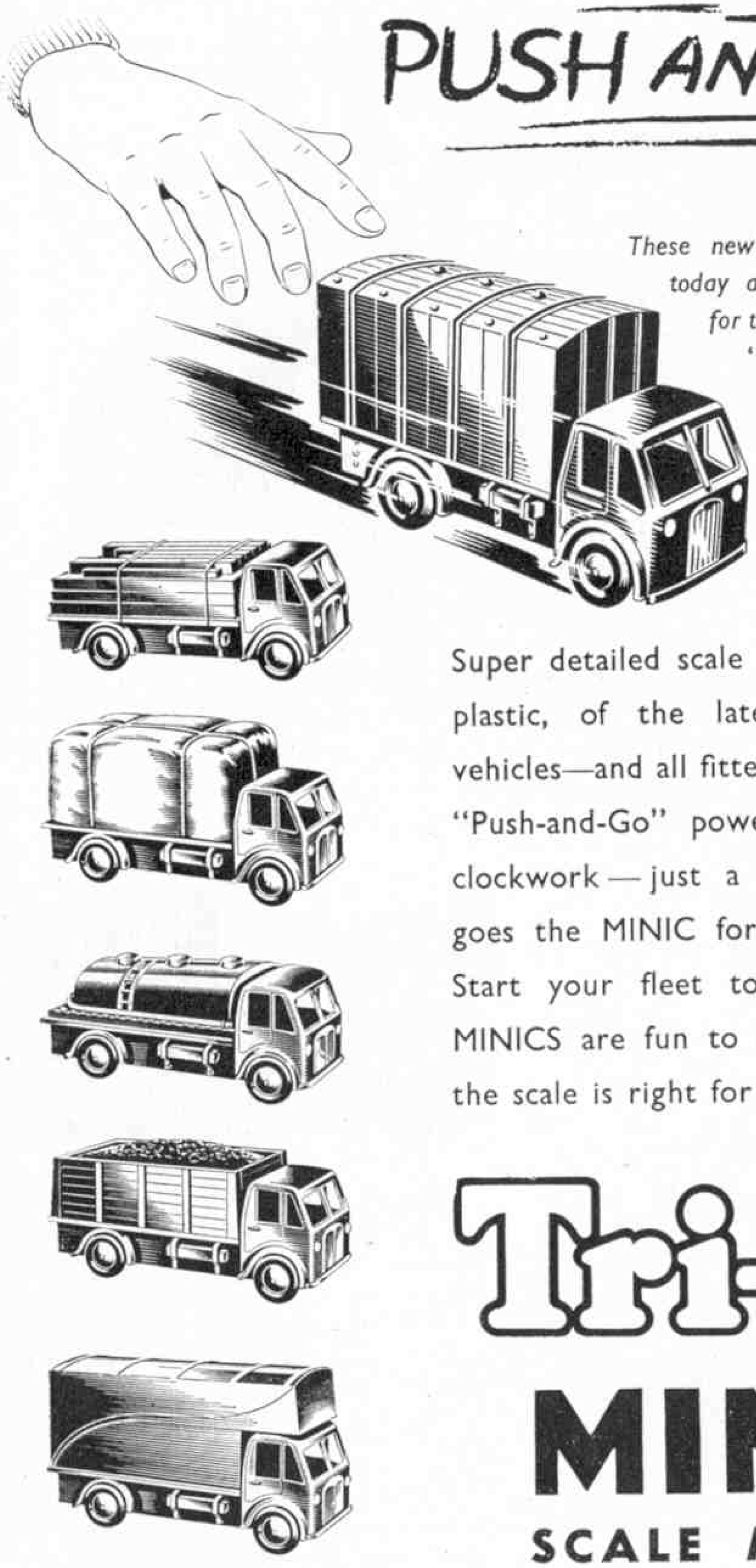

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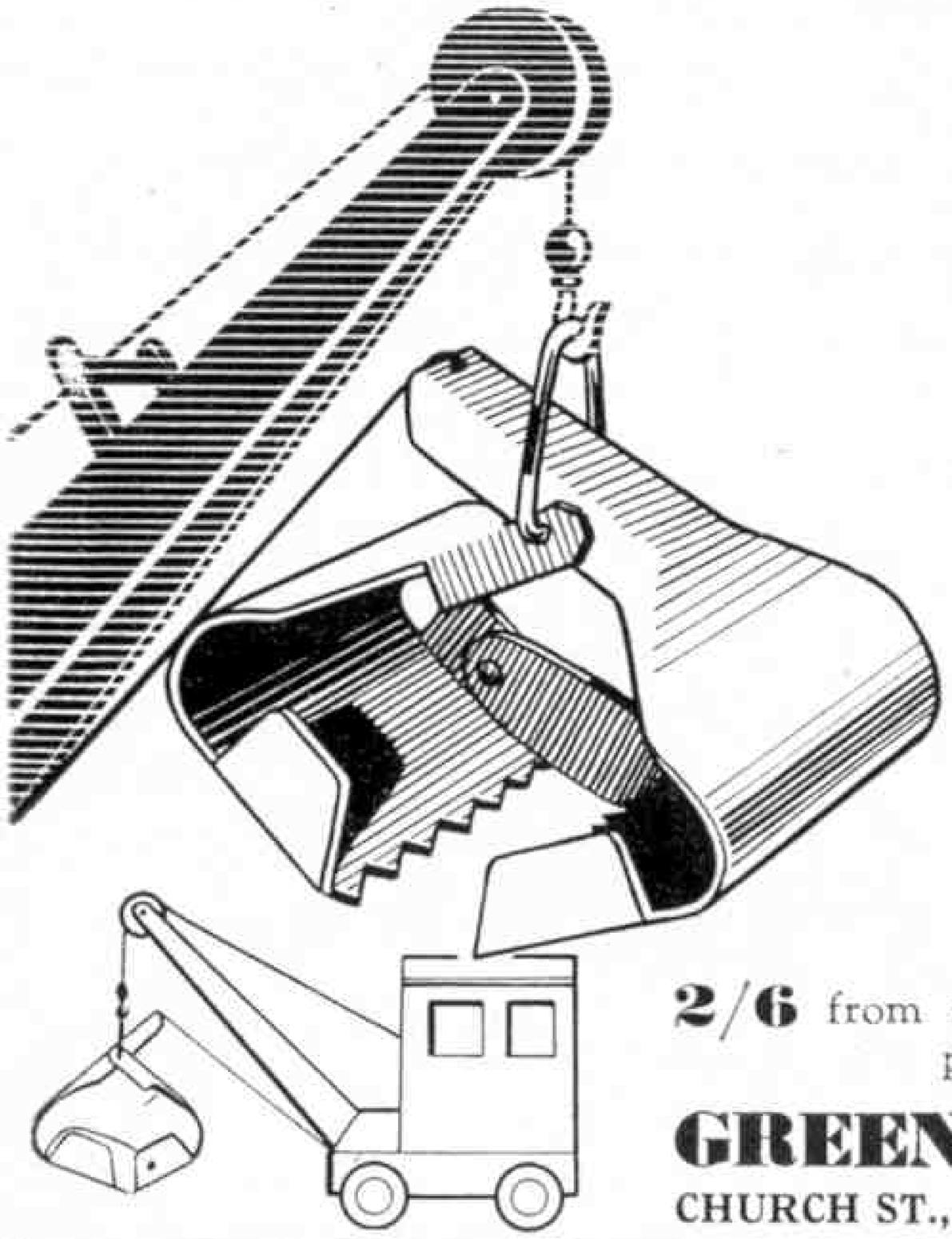

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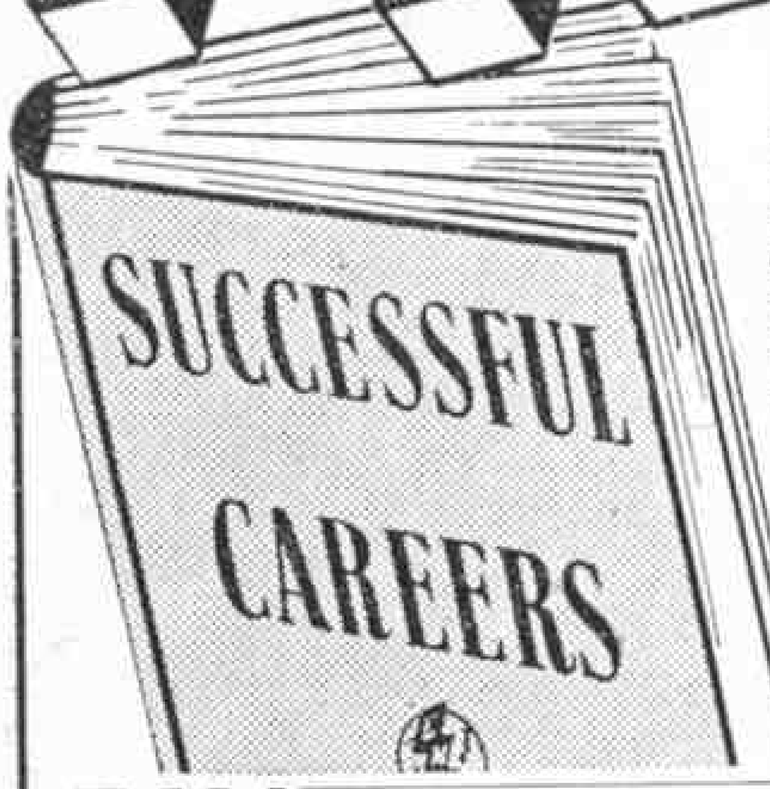

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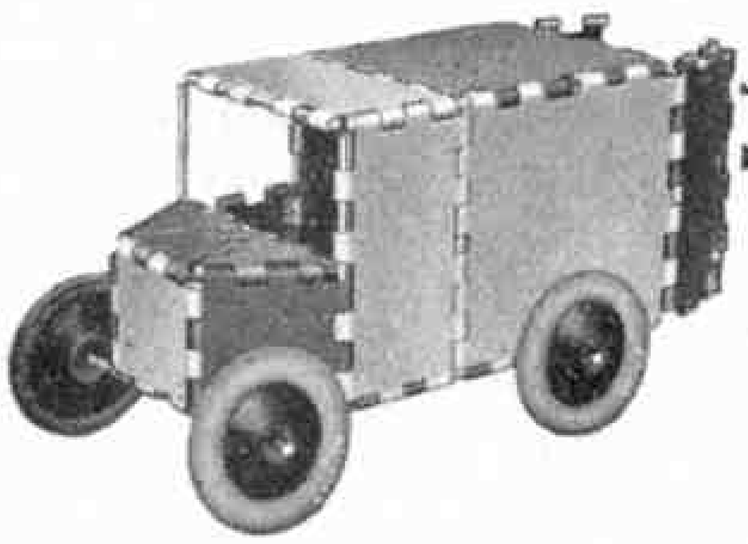
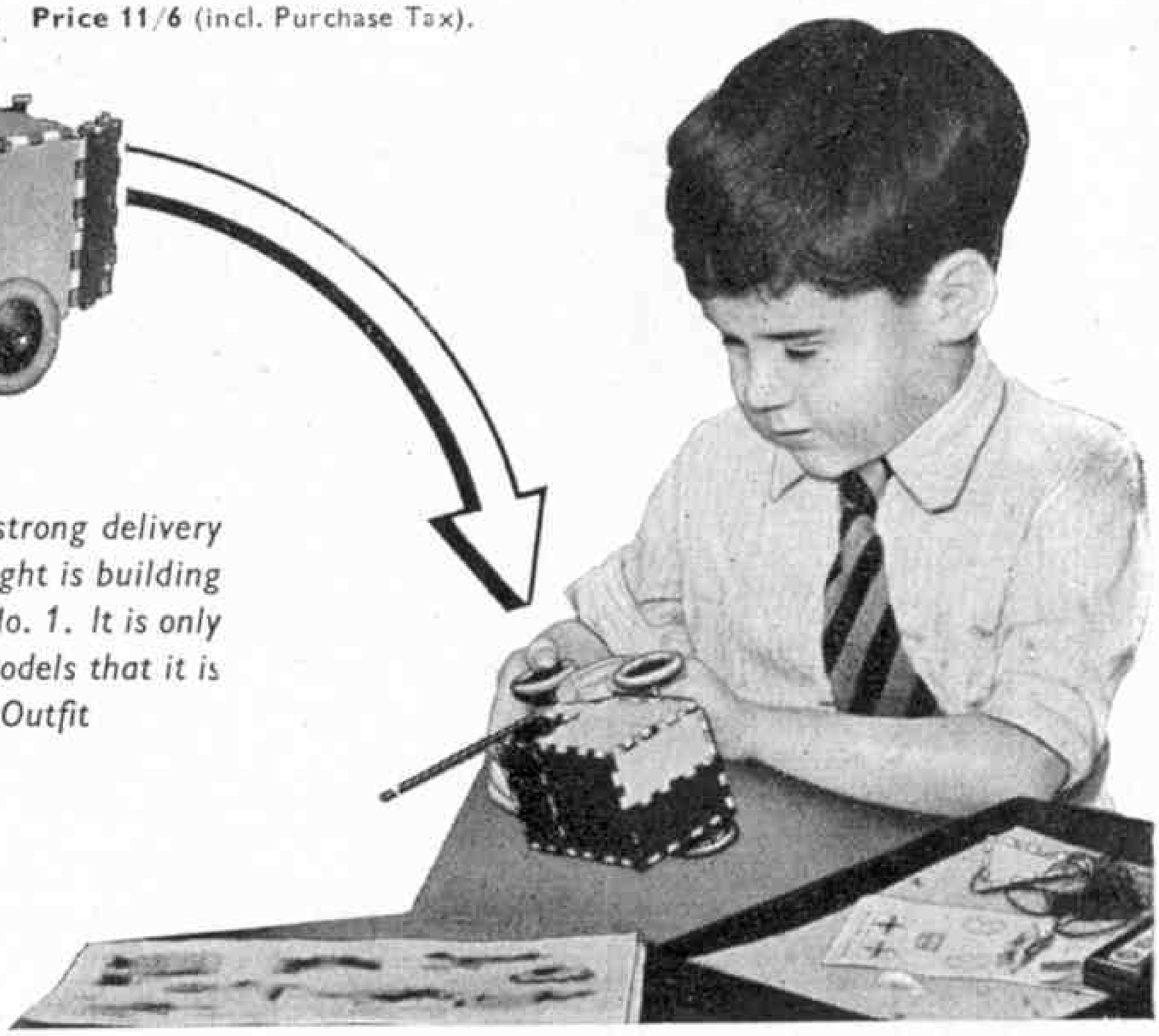


Here is a close-up of a strong delivery van which the boy on the right is building with Dinky Builder Outfit No. 1. It is only one of a large number of models that it is possible to build with this Outfit



MADE IN ENGLAND BY MECCANO LIMITED

Next Month: "A GIANT 200-TON TRAILER."

MECCANO MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
England

Vol. XXXVIII
No. 8
August 1953

The Le Mans Victory

Last month I told you about two fields in which Britain has led the world to great triumphs, and now there is another remarkable British achievement to record, this time in the motor world. The 24-hour road race at Le Mans is one of the outstanding events of the year in motoring circles, for the winning cars in such a race must not only be fast but enduring, capable of running practically continuously, with the minimum of attention and at very high speed, throughout the whole of the 24 hours. What this means can well be imagined from the fact that the winning car in this year's race covered 2,540.3 miles and its average speed was 105.85 miles. And this car was a British one!

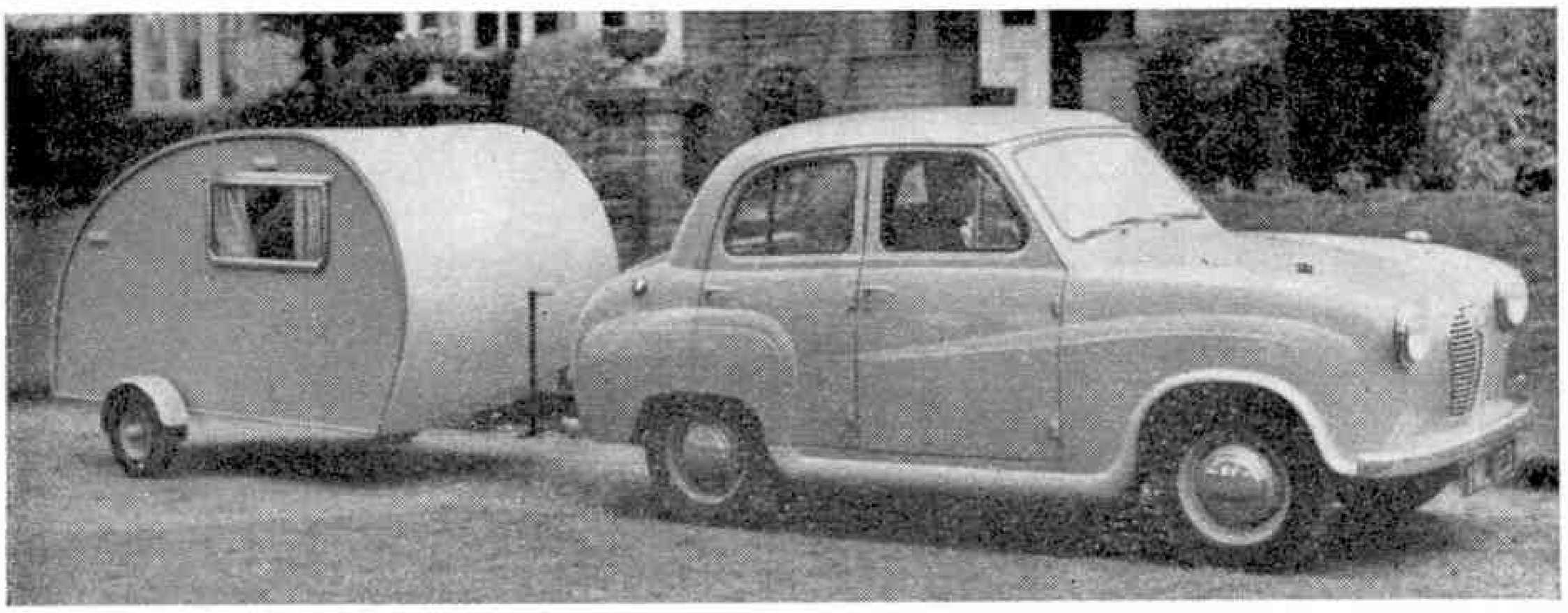
You will already know that this triumph was achieved by a Jaguar, and that other cars of the Jaguar team were second and fourth in this exacting race. More about the race itself you will read on page 392, on which begins a description of it by a Magazine correspondent who made a special journey to Le Mans so that you could have the pleasure of reading a first-hand story of this inspiring event.

A road roller built in 1892 travelling along City Road, Birmingham, on the way to the Museum of Science and Industry.

A Veteran Goes Home

Now for a contrast. The road vehicle shown in my picture this month is not as fast as the winning Jaguar at Le Mans! But I am just as deeply interested in it and I think that you will be also. It represents an engineering achievement of more than 60 years ago, for it is a single cylinder steam roller built by Aveling Porter in 1892. It was found some years ago on the roadside near Lichfield and has been beautifully restored at the works of Hunt Bros., Griffin Foundry, Oldbury. In the picture Mr. T. G. Hunt is seen driving it to its final resting place in the New Science and Industrial Museum, Birmingham, along a road that it originally helped to lay. But don't just say good-bye to it, especially if you live in the Birmingham area; go and see it, and admire it.

The Editor



Caravans of Today

Comfort on Motor Camping Tours

By J. Dewar McLintock

A LOT of strange and exciting and sometimes foolish things have happened in the caravan world in the past few years. At various exhibitions, trade shows, etc., people have been shown all kinds of new types, from tiny folding bivouacs to great, ungainly double-deck monsters.

As a matter of fact, some of the manufacturers have gone a little haywire over the big stuff, and have not always by any means got away with it. To be moveable by car, a trailer caravan has to be stable and well balanced. The new freaks were *not*. The makers were not to be blamed too much for "trying it on," because they were trying to offer homes for people who badly wanted them, but when folk spend a lot of money—perhaps £2,000—on a caravan, they usually want it to be mobile when necessary.

At that end of the scale there have been one or two interesting compromises, fortunately. Thus there are "twin" caravans. That is to say, two ordinary caravans, not too large to tow comfortably, are made and fitted out so that one is for sleeping and the other for daytime living purposes—the equivalent of the upstairs and the downstairs of a small house. When on site, there is a permanent covered way between the two doors, and of course the two vans are on the normal jacks at each corner.

There are also expanding caravans. By various means, sections or complete sides or ends are made to extend outward when on site, so that the size is greatly increased. When on the road, you see, the maximum permitted dimensions are a length of 22 ft. and a width of 7 ft. 6 in.

At the other end of the scale, there has been a new, or at least a renewed interest in the very small caravans. I call them caravans, but in a number of cases they are really portable tents, as we shall see. But first, I want to talk about the new Berkeley Caravette. Now that is something that the girls would merely call "cute," but really it seems a very practical answer to the problem of those who like camping, but not in tents! I must agree it is good to be as far separated as possible from crawlies and from wet ground and chilly breezes.

The Berkeley Caravette hitched up to an Austin A30. Small wheels are no disadvantage on so light a structure.

There is a picture of it here, and you can see its possibilities. At the rear is a cooking compartment, where you can get to work with the Primus. If it is raining, the work can be done from inside, but in any case the lid acts as a shelter. The Caravette can be towed easily by an Austin Seven, and even by a motorcycle.

A somewhat more ambitious affair, although not so streamlined, is the County Tent-Trailer shown here. It folds down for travelling and would hardly be felt behind an "eight."

Among the more tent-like types, the Campendium is interesting. When closed down it is only four foot square, but its length is doubled when opened out, and doors and roof supports magically appear,

and a gaily striped canvas cover is put on. During the day, one side can be opened to make a sun porch. At night, two people can sleep in comfort on a double camp bed.

A folding van that has become very popular overseas as well as here is one called the Wanderer. It is perfectly rigid when erected, and is a real caravan in every sense of the word. But when its sides and roof are folded, it is very compact, and is only 4 ft. 6 in. wide. It is properly equipped, even with sink and cooker, and can sleep two adults and a child in comfort. The expanding operation is easy and takes only a minute, even in the dark.

The County Tent-Trailer with its roof lowered for travelling. The car is a Morris Minor.

The Wanderer is really the link between the folding types and the more sophisticated caravans, still true lightweights and towable by "eights," but rigidly built and following the same lines as their senior fellows, the 12 to 18-footer touring vans. These lightweights are all about 10 ft. long and are two or three-berth sleepers, with little kitchens and Calor gas cooking and lighting. Some time ago I was able to do a short tour on one—the Alperson Colt—and I and my companion thoroughly enjoyed ourselves, towing it with a new Morris Minor and having not the remotest difficulty on hills or in traffic.

I must admit, however, that I did find that trying to reverse the car and caravan in a narrow lane, when discovered to be a cul-de-sac, is just no joke . . . ! When you turn the car wheels one way, the caravan goes the other, as it tends to jack-knife on itself. In desperation I got my wife to help me to unhitch the little van, and we turned them round separately, but later on I got in some stealthy reversing practice. I now have a greater admiration for those men who wield articulated "commercials" as though there was just nothing to it!

The caravan makers mostly produce a very sound job these days, although they have to keep the weight down to reasonable figures. Caravans are no longer strictly speaking coach-built, except when they are made for showmen, to special order. The wood frame members are made in quantity in the sawmill, to jig dimensions, perfectly finished, and they are then assembled on large jig boards for sides, roof and ends. These parts are then put together with the floor, which has been separately built on the chassis, as a basis. The inner and outer skins are then fixed on this shell. They may both be of hardboard, but it is better to have an outer skin of aluminium. Some vans have a "sandwich-filling" of insulating material between the two skins. Chassis-frames are of channel steel, and automatic brakes are fitted, so that when the car is decelerating or going downhill the caravan brakes are applied. The most popular type of van is probably the "middle weight" of about 15 ft. length.

Pixy by name and pixie-like in appearance, somehow. The Paladin lightweight, which has an excellent specification.

Chain Cables

By W. K. V. Gale

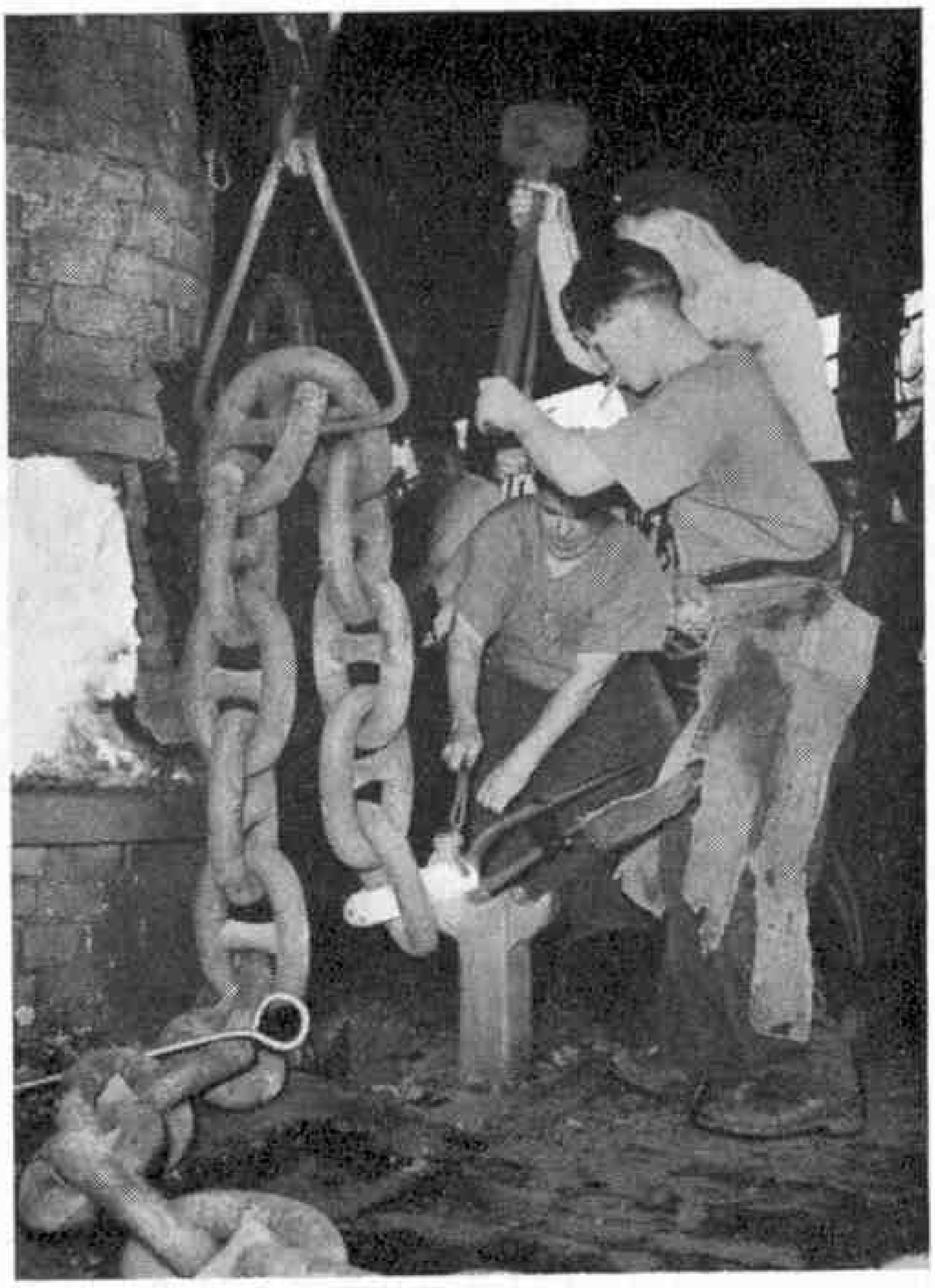
THE chain cable, as used for anchoring and mooring ships, is a special type of chain, having a central stud or stay pin in each link. The stud gives extra strength to the link, and helps to preserve the freedom of the joints, so that the cable will run out freely.

Chain cable in its present form was the invention of Captain Samuel Brown, R.N., who started to make it at Millwall, London, in 1808. In Brown's day the only material suitable for chain cable making was wrought iron, and Brown devised methods of working it into links. Since then, high tensile steel cables have been developed, and completely new techniques have been introduced for working this material. Nevertheless, large quantities of wrought iron chain cable are still made, and in this branch of the trade, the tools and methods remain almost unchanged.

There are two types of chain cable, end welded and side welded, the dividing line between the two being a question of size. Up to about $1\frac{3}{4}$ in. diameter end welding is used; above that size cables are side welded. The size of a chain cable, it should be noted, refers to the diameter of the bar of iron from which it is made. Machinery is used to cut the iron bars into short lengths and, in the case of the larger cables, to bend the links roughly to shape. Everything else is done by hand, by a team of three men, who shape the red hot iron into a link, and weld it with hammers.

Chain cable making is very interesting to watch, as the cover of this issue shows. The men work with simple tools, and each performs his task quickly and in silence. Indeed, there is no time for spoken instruction from the leader of the team. It is literally a case of "striking while the iron is hot," and each man has to know his job thoroughly. Watching a team at work, the onlooker is apt to get the impression that the work is simple, so quickly does the link seem to take shape. On the contrary, the making of a single link can be divided into about fourteen distinct operations.

The tools and the operations, as is so often the case in an old trade, have special names, and the visitor to the chain cable works would find himself confronted with



Hand welding side-welded chain cable with the heavy two handled hammer known as the Johnny. This illustration and the photograph on which our cover is based are by W. K. V. Gale.

such terms as the "Johnny" or the "dolly." The former is the heavy two-handled hammer used in side welding and is shown in the illustration on this page; the latter is seen resting on the link in the cover picture. Similarly, the link is not "bent," it is "cranked and knocked down." Even the process of welding itself is usually referred to as "shutting."

There are many more terms and usages for which space does not permit mention, but reference must be made to one in particular. The chain cable trade provides one of the few remaining examples of the old sub-contracting or "butty" system, which was once very common. The leader of the team alone is employed and paid by the chain cable-making firm, and he engages and pays his assistants without reference to his employer.

Finally, it must be said that he who would see chain cable making must go to the works early. It is the trade custom to start work at 5 or 6 a.m., and to finish when the day's quota of cable is made. By midday the works are usually deserted.

Waterloo Air Terminal

By John W. R. Taylor

General view of British European Airways' new London Air Terminal at Waterloo. Photographs by courtesy of British European Airways.

ON my way home from the office recently I decided to take a quick look at British European Airways' new London Air Terminal, opposite Waterloo Station.

Many of you will remember it as the former Station Gate building of the 1951 Festival of Britain South Bank Exhibition; and the fact that it is so convenient for both the main line and underground railway stations had a great deal to do with B.E.A.'s choice of the site for their new passenger centre.

Like its railway counterpart, Waterloo Air Terminal is a busy, exciting place, handling thousands of passengers each day; and there is a link with the railway in the painting of Stephenson's famous *Rocket* locomotive on the wall of the upstair buffet—a reminder that it was once the Festival of Britain Rocket Restaurant. But there the similarity ends; for the B.E.A. Terminal, with its gleaming counters, colourful decoration and brightly-lit spaciousness, contrasts vividly with the dim, smoky hustle and bustle of the other, older Waterloo Station.

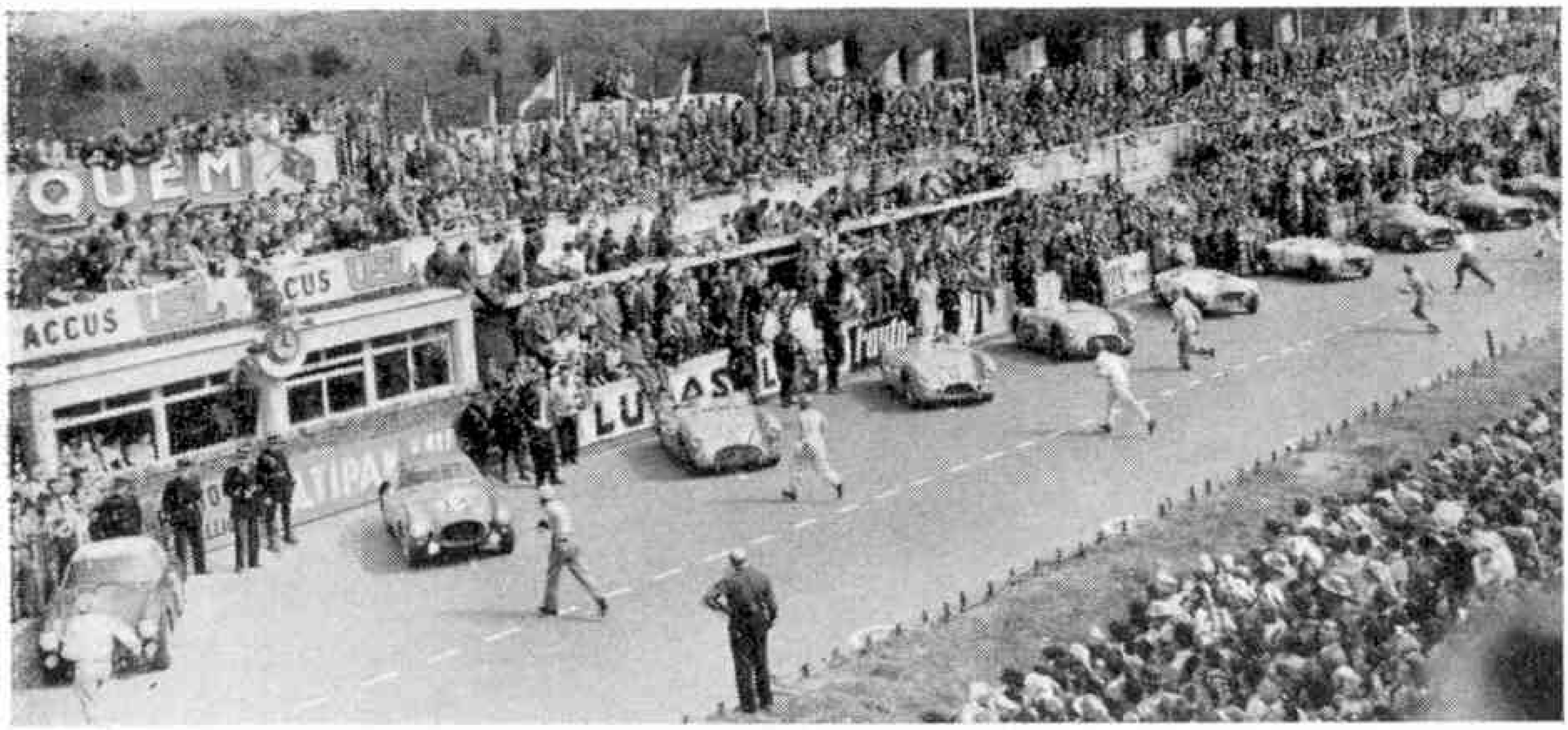
Eventually, as many as 16,000 passengers a day will pass through the Terminal; but there will be no cramming. Arrival and departure halls are spacious, and the counters for booking clerks, cashiers and baggage handling are planned to ensure a smooth, uninterrupted flow of traffic by day and night. A left-luggage bay, bank, hotel booking centre, bookstall, shop and telephone kiosks help to cater for the passengers' every need.

Outside, the parking area is so extensive that 24 of B.E.A.'s new 37-passenger coaches could be loaded and unloaded simultaneously, enabling the Terminal to cope with passengers from up to 60 flights an hour. Between the coach park and the river, new gardens are beginning to take shape.

Passengers having their tickets and baggage checked at the Waterloo Air Terminal.

All this is important because, although visitors from overseas still undergo the usual Customs and immigration formalities at the Airport, this routine is international. Their first real impressions of Britain are formed during the subsequent 60-min. coach trip to London, which now takes them along the south bank of the Thames, past such historic buildings as Lambeth Palace and, on the other side of the river, the Houses of Parliament. And they cannot fail to be impressed by the Terminal itself at the end of their journey.

B.E.A. can, in fact, be every bit as proud of their new London Terminal as of the superb Viscount and Elizabethan air liners whose passengers pass through it.



British Triumph at Le Mans

Jaguars Supreme in Famous Road Race

By Peter Lewis

Photographs by courtesy of The Autocar

LAST June, on the fast eight mile circuit of the Sarthe, near the French town of Le Mans, British Jaguars raced for 24 hours against the cream of the world's cars and drivers to win this greatest of all international road races. Four Jaguars started and all finished; a triumph of British engineering which will wield tremendous influence in the export markets of the world.

Eight times since the first race in 1923 British cars have won at Le Mans. The French have won seven times, the Italians five times and the Germans once—last year. The average speed of the winning car in 1923—a Chenard et Walcker—was just over 57 miles per hour for 24 hours; the winner's speed this year was just over 105 m.p.h., an average maintained night and day on an ordinary road that is open to traffic all the year round, and including pit stops.

The entries at Le Mans are limited to sixty and the race is open to standard sports cars with open or closed bodies, and to factory prototypes—the sports cars of tomorrow. With the fastest cars exceeding 150 m.p.h. on the four mile Mulsanne straight, it is no wonder that the entry lists include the most famous Grand Prix drivers in the world.

The regulations stipulate that repairs can only be carried out with the spare parts and tools actually carried on the cars and no driver can refill with petrol, oil, water, or brake fluid except at intervals of 235 miles. Neither of the co-drivers can be at the wheel for more than 80 laps (approx. 695 miles) at a stretch or for more than eighteen hours driving time all told.

I arrived in Le Mans on the morning of race day and parked in the square in front of the famous Cafe Gruber alongside a cosmopolitan array of vintage and modern cars. All Europe was represented on their number plates and there was the babble of a dozen tongues in the cafe—world-famous as a meeting place for drivers and enthusiasts.

The starter's flag has fallen, and drivers sprint to their cars while the massed spectators wait for the first engine to roar into life.

After an enjoyable lunch I was away again, soon to be caught in the stream of traffic crawling out towards the circuit. My 'Press' pass helped me along and by 2.30 p.m. I had parked the car. Already a quarter of a million spectators were around the track, and in the vast car parks tens of thousands of cars stood in long lines. British charter planes and American transports circled overhead and waited for instructions to land on the airfield, only a few hundred yards away from the circuit.

The cars, some with open and others with rakish saloon bodies, stood in front of the pits while the privileged few who possessed the right sort of pass walked

from car to car. The spectators—fifteen and twenty deep—looked across from the other side of the track or jammed the pit gallery above me in a solid mass.

At the head of the line—for the cars are marshalled at the start according to engine capacity—were a supercharged French Talbot and the white American Cunninghams. Then came the Allards in British racing green, the Italian Lancias, and so on down the line beyond the Talbots, the Nash-Healeys and the Ferraris to the Jaguars.

I asked a Jaguar mechanic what chance they had. I remembered last year, when the whole Jaguar team was out of the race only 3 hours after the start. "I think we've got something this year," he said.

Then the pit area was cleared and I just had time to take a quick look at the Italian Alfa-Romeos and Lancias and the British Aston-Martins and Austin-Healeys before crossing to the other side of the track and taking up position in the Press Stand.

The start of the Le Mans race is an unforgettable experience and as the hands of the clock on the Dunlop Bridge drew near to four o'clock the massed crowds were silent. The drivers stood opposite their cars as the French announcer ticked off the minutes . . . then the seconds. 35 seconds to go . . . 15 seconds . . . 5 seconds. Then down went the flag and there was the patter of feet as the drivers sprinted across the road. Suddenly the first engine burst into life, followed quickly by the others, and along the length of the pits car after car pulled away and accelerated, with Stirling Moss weaving in and out from his position seventeen places from the front.

The red Italian Ferrari of World champion Ascari and co-driver Villoresi, screams through the fast S bend in the pinewoods with the Rolt-Hamilton Jaguar and an Aston-Martin hard on its tail.

There was a crash of noise as the whole field, tightly packed, went under the Dunlop Bridge and up the hill. Soon the sixty cars had dropped over the top, and out of sight—down through the pinewoods to Tertre Rouge corner.

We had just over four minutes to wait before we saw the leaders in the distance—mere specks—as they came through White House corner and down the straight to the pits. For the first time since the Bentleys raced at Le Mans a green car flashed by in the lead. It was Sydney Allard's car with the Ascari-Villoresi Ferrari second, and Stirling Moss third in his Jaguar. Then the

The winning C-Type Jaguar, driven superbly night and day by Tony Rolt and Duncan Hamilton, covered 2,540.36 miles at an average speed of 105.85 m.p.h., an amazing average due largely to the new Dunlop/Girling disc brakes.

whole field swept by with a blare of exhausts, and behind the pits the giant scoreboard started to tell the story of an epic race.

The Allard triumph was short-lived and when the green car came into the pits, the red Ferrari shot into first place. But not for long. As the leaders came round for the fourth time, Stirling Moss led from the Ferrari, lapping steadily at 107 m.p.h.

Peter Walker, co-driver to British champion Stirling Moss, climbs into Jaguar No. 17 after the race. Stirling, his face grimed, smokes a well-earned cigarette. He and Walker drove magnificently, after pit delays, to finish in second place.

On the 8th lap Tony Rolt lapped at 108 m.p.h.—a new lap record—and closed up hard on the tail of the Ferrari.

When Stirling pulled into his pit, first to change a plug, and then to clear a choked fuel filter, Rolt swept ahead of the Ferrari to take the lead. At 6 p.m. the race average was bordering on 105 m.p.h.—and in 1952 the Mercedes won at 96 m.p.h.!

Four hours after the start the Jaguar still led the Ferrari, and Italian Alfa-Romeos were lying 3rd and 4th. The Sanesi-Carini Alfa-Romeo had actually lapped at 110 m.p.h.

Dusk turned to darkness whilst the loudspeakers blared French music and the pits and grandstands blazed with light. The cars—with yellow headlights full on—swept down from White House and past the pits at over 100 m.p.h.

At 10.30 no less than fifteen cars were out of the race, including Mike Hawthorn's Ferrari, Fangio's Alfa-Romeo, two of the big French Talbots and Reg Parnell's Aston-Martin. However, all the Jaguars and Cunninghams remained and at midnight as some of the thousands around the course settled down for the night in tents or in their cars, the Rolt-Hamilton Jaguar still led the Ferrari with the Alfa-Romeos 3rd and 4th and a Cunningham 5th.

And yet thousands did not sleep. A cup of sweet, sticky coffee at one of the innumerable coffee bars was all they asked. They lined the gallery above the pits all night, and the enclosures in front of the grandstand were seldom clear of crowds.

At 4 a.m.—half distance—the Rolt-Hamilton Jaguar still led at an average of 106 m.p.h. with the Ascari-Villoresi Ferrari two laps behind. Both the Alfa-Romeos had retired and the Fitch-Walters Cunningham had moved up into 3rd place with Jaguars 4th and 5th.

As always at Le Mans the dawn brought an unpleasant mist, but still the leading cars roared round the course at speeds little reduced. Just before 7 a.m. Tom Cole's open Ferrari got out of control in the mist after passing a slower car at White House and crashed. Cole was killed instantaneously.

As the hands of the clock on the Dunlop Bridge turned to 8 a.m. the crowds who had gone home the night before or down to Le Mans, as I did, for a 10/– omelette at Grubers, began to stream back on to the circuit. The giant scoreboard showed no change—still Jaguar, Ferrari, Cunningham, Jaguar. But something was wrong with the speeding Italian car. In fact, since the early hours the rakish red Italian coupé had been handicapped by a slipping clutch.

Sure enough the Ferrari was finished, but even so it had established a new lap record for Le Mans at 112 m.p.h.—which still stands.

To the delight of the British spectators, the Moss-Walker Jaguar now passed the Cunningham and moved up into second place, four laps behind the Rolt-Hamilton car. All four 'Jags' were going well, including the privately (*Continued on page 432*)

BOOKS TO READ

Here we review books of interest and of use to readers of the M.M. With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"BUTTERFLY FARMER"

By L. Hugh Newman, F.R.E.S.
(Phœnix House Ltd. 16/- net)

Mr. Newman is well-known to readers of the *M.M.* as a contributor of articles on butterflies and moths, the most recent of which indeed appeared in last month's issue. Yet few readers probably know how fascinating and even romantic his life has been since he joined his father L. W. Newman, at the now famous Butterfly Farm at Bexley, in Kent.

Thousands of butterflies and moths are bred on the Farm every year for enthusiasts all over the world, and a list of those whose wants are met by it would include a Dominion Government that ordered 60,000 living pupæ of a moth to fight a spread of weed, a hospital interested in cancer research, very many general collectors and even garden lovers who just want more butterflies among their flowers. Sir Winston Churchill is numbered among the last of these, and Mr. Newman has an interesting story to tell of his efforts to naturalise butterflies in the gardens at Chartwell.

Every page of the book contains something of real interest, whether dealing with work on the Farm, with its trees and bushes covered by strange looking sleeves of muslin, the author's captures afield of wild butterflies and moths, often rare and valuable, and his travels overseas, particularly to Finland and Sicily, in search of specimens for well-known butterfly and moth enthusiasts. There are even tales of auction room activities, for competition for specimens of rare butterflies and moths is keen, with a section dealing with the origins of the many strange names given to butterflies and another describing the activities of famous collectors. Altogether, the book is full of attractions, and not the least of these are the illustrations, 68 of them, all reproduced from photographs that between them seem to cover every possible phase of life in the moth and butterfly world.

"TITLED TRAINS OF GREAT BRITAIN"

By Cecil J. Allen, M.Inst.T., A.I.Loco.E.
(Ian Allan 15/- net)

Mr. Allen's excellent book has now reached its third edition. In his foreword he tells us that it has been a pleasure to him to write it; we are sure that it will be a pleasure to railway enthusiasts to have it in their possession, not merely because of the romance that is attached to the names of famous trains, but also because of the opportunity this gives them of sharing in the encyclopædic knowledge of railways that Mr. Allen possesses.

The book is actually the story of every named train that has travelled on British rails. In his first edition the author described 70 of these, but the number has now increased to 108. This has meant considerable additions, and a wholesale revision. So much information indeed is now given that some compression has appeared necessary to keep the volume within bounds, but this compression has been achieved without making the book unattractive and we have many vivid memories based on the author's own experiences of travel in many of the trains dealt with.

There are illustrations in plenty, all reproductions of excellent photographs of named trains in interesting surroundings.

"THE EARTH AND ITS MYSTERIES"

By G. W. Tyrrell, D.Sc.
(G. Bell and Sons Ltd. 16/- net)

Here is a very useful addition to a series issued by the publishers, previous volumes in which have dealt with the mysteries of the air, the sky and the sea. It is intended as an introduction to earth science, but it is more than an elementary book on geology. Although it is accurate and scientific in content, it is written in such a manner that everybody can follow the author and understand what he has to tell them.

There is a wealth of fascinating topics for all who begin to look into the story of the earth on which we live. Some of these are spectacular and awe-inspiring in character, such as earthquakes and the tremendous outbursts of subterranean activity that manifest themselves in volcanic eruptions. Others are less violent, but none the less interesting when we begin to understand them. These include the work of rivers, the wind, glaciers and the sea, and what we learn of the fossil remains of life to be discovered in our rocks brings home to us the immense length as well as the wide variety of the contents of the Book of Stone that lies underneath our feet. From these topics we pass on to such matters as the origin of mountains, the drift of the continents, radioactivity and the age of the earth.

The book is well illustrated by 14 plates, with more than 50 figures and drawings in the text.

"ABC MILITARY AIRCRAFT RECOGNITION"
"ABC CIVIL AIRCRAFT RECOGNITION"

By John W. R. Taylor (Ian Allan 2/6 each)

The 1953 edition of *ABC Military Aircraft Recognition* is on the same lines as the previous issue. The main part deals with nearly 70 major types of British, American and Canadian military aircraft, in each case giving a good half-tone photograph and a 3-view silhouette, together with a brief specification and a summary of structural features. The machines are dealt with alphabetically according to type. The second part illustrates 31 less important British and American types, including prototype and research aircraft, and types in service in small or diminishing numbers.

The success of the previous edition of the above work has led to the publication of a companion volume *ABC Civil Aircraft Recognition*. The main part of this contains photographs and 3-view silhouettes of 50 major current types of civil aircraft, ranging from small single-engined machines like the Auster Aiglet to giant air liners such as the Bristol Britannia. A short supplementary section gives a photograph and brief details of each of 39 other types of civil aircraft, of lesser importance either because they are rarely seen over this country or because only one or two examples are still flying.

These handy little pocket books will prove very helpful both to aircraft spotters and to aeromodellers.

NEW NATURE BOOKS

(Brockhampton Press 2/- each)

These neat little pocket books provide excellent introductions to their respective subjects, and will be welcomed by young naturalists and others who love the countryside. Each booklet contains 28 coloured illustrations with descriptive notes and an index. *Woodland Birds* deals with 27 different species, and in each case particulars of colour, size, habitat, voice and distribution are given, and the nesting details include number, size and colour of the eggs. The 26 creatures dealt with in *Wild Animals* range from deer to lizards and snakes, with notes on their habits, form, size, colour and food. *Garden Flowers* deals with 28 different kinds, all of which bloom in the first season after planting, and the notes on them include practical advice on the best time and places for planting.

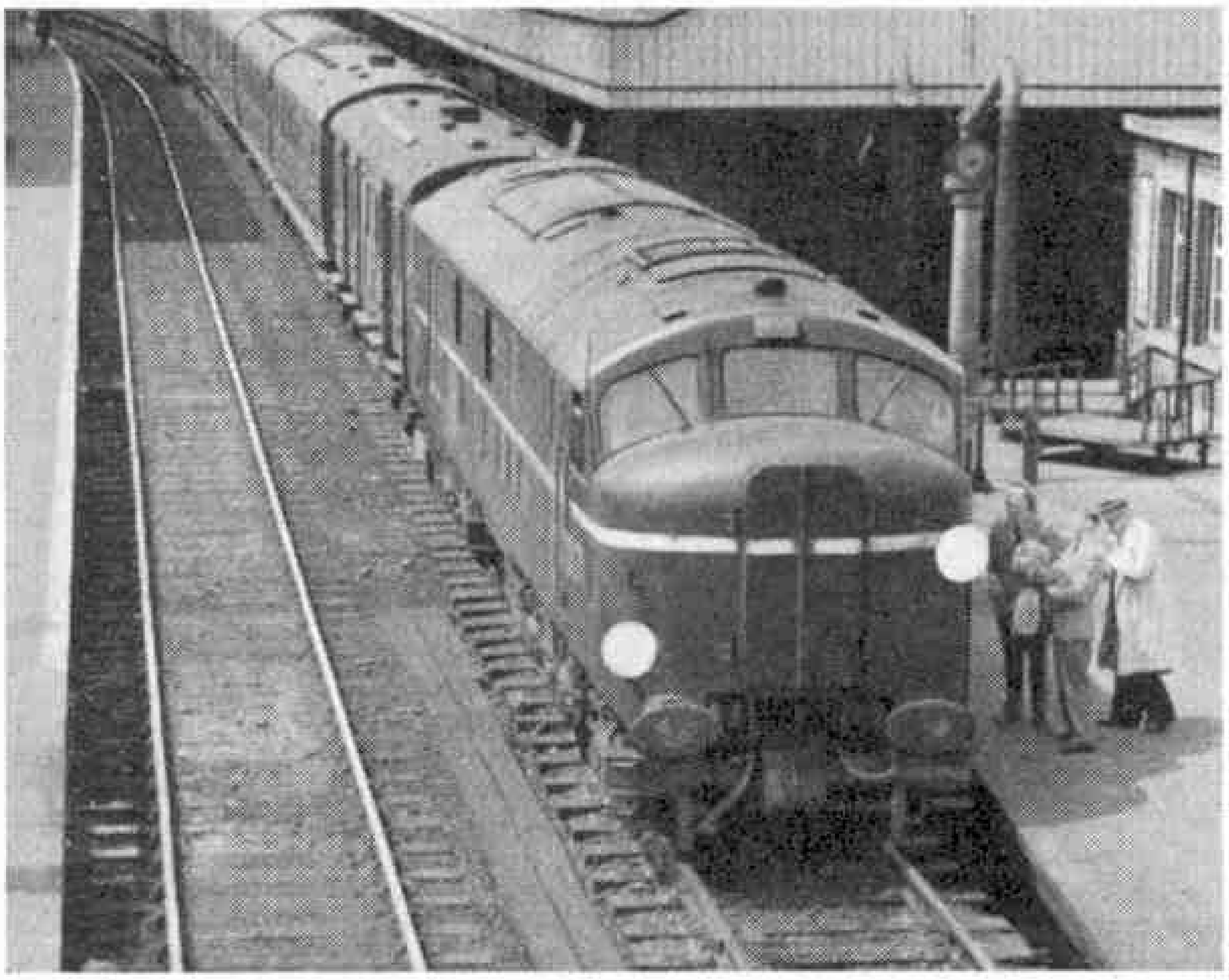
Other pocket books in this series deal with *Forest Trees* and *Garden Birds*.

Diesel Twins Fight it Out

A Run on the *Royal Wessex* behind No. 10000

By S. C. Townroe, A.M.I.M.E.

IN the July 1952 *M.M.* I described a trip on one of the Southern main-line diesel twins, No. 10201, when working *The Royal Wessex* for the first time. Since then the two Ashford-built diesel-electric locomotives, Nos. 10201 and 10202, have been challenged on their own ground by the Derby-built twins, Nos. 10000 and 10001, which have been transferred from the London Midland Region to the Southern Region, and are now working the principal trains on the Weymouth and the Exeter routes, in company with the Southern diesels.



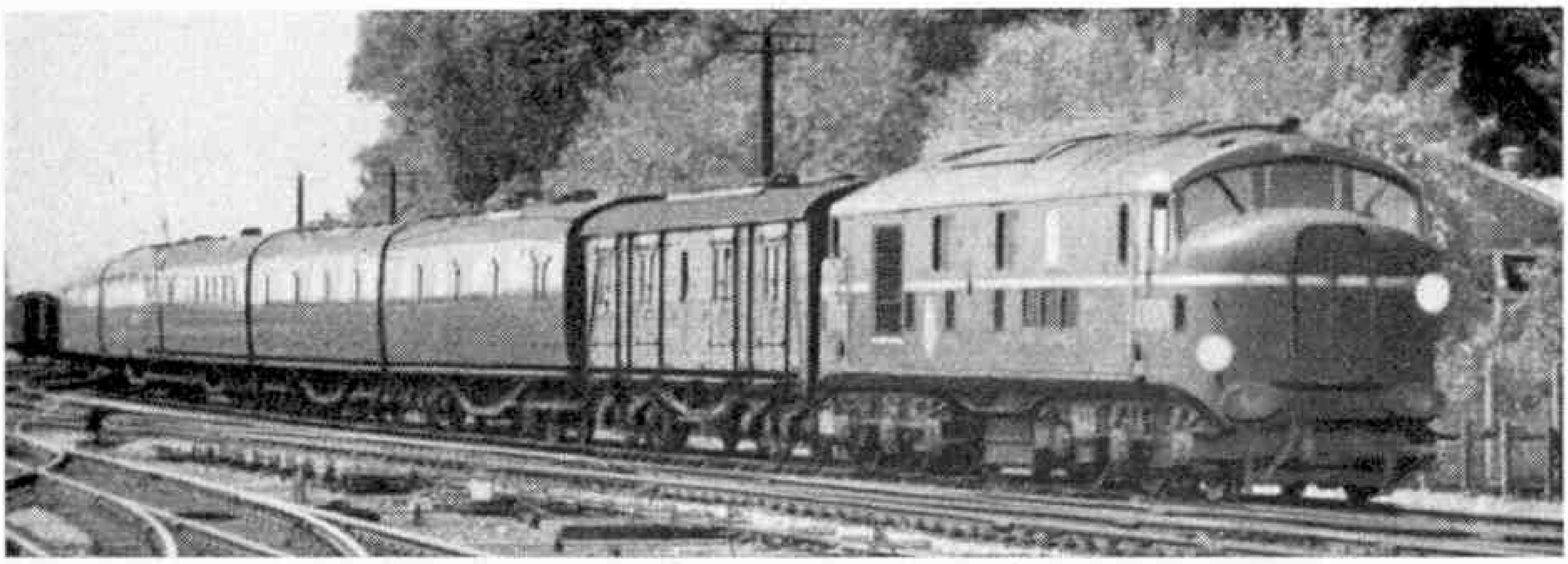
No. 10001, one of the London Midland Region diesel twins, at Southampton Central. This engine and No. 10000 were transferred from the L.M.R. to the Southern Region, to work in company with the S.R. diesels.

All British Railways' main-line diesels are now concentrated in one area. The distances from London to Weymouth, 143 miles, and to Exeter, 172 miles, combined with a fairly frequent service of passenger trains, make it possible to roster these locomotives each to perform double trips to either destination in twenty-four hours. The Southern diesels hold enough fuel oil to run to Exeter twice; but the Midland diesels require re-fuelling between trips and their water supply must be replenished under pressure through underframe connections, whereas the Southern diesels can take water from an ordinary water column. The Midland diesels therefore require a slightly longer marginal time between trips.

Nos. 10000 and 10001 were built in 1947-8, three years before the Southern diesels, and had already run a considerable mileage on their parent region, sometimes in tandem, before they were handed over to the Southern Region, where they work as separate units. Although their nominal rating is 1,600 H.P., against 1,750 H.P. in the case of Nos. 10201 and 10202, the equipment is similar and is by the same makers, the English Electric Company. Their performance closely approaches that of their more modern rivals, but just how closely still remained to be seen when on 23rd April 1953, No. 10000 backed on to the 448-ton train forming the down *Royal Wessex* at Waterloo for the first time.

The *Wessex* timing of 55 minutes to pass Worting Jct., 51¼ miles from Waterloo, is considered to be a tougher proposition than the 51 minutes allowed for the accelerated *Atlantic Coast Express* normally loaded to 365 tons. The Southern diesels had shown that they could achieve a time of 51 minutes to Worting Jct. with *The Royal Wessex*. How much under the 55-minute allowance could the Midland diesel No. 10000 achieve with the same train?

On the day of the trip, weather conditions were good; there was a nice dry rail and no head wind. Driver E. Lane of Bournemouth was in charge; he sat high up in the American-style nose-end of No. 10000 waiting for the guard to give him the green flag. The big 16-cylinder engine was ticking over steadily, but the noise in the engine room prevents conversation, and passage through the interior of the Midland diesels is not very easy, as they are more cramped for space than the Southern design.



No. 10001 approaching Southampton on a Weymouth to Waterloo express.

Promptly at 4.35 p.m., we made an excellent start, assisted by a vigorous push from the Drummond M.7 tank engine at the rear, an engine, incidentally, that was fifty years older than the train engine. Over Westminster Bridge Road the driver put the control handle of the diesel to full power and we roared along through Vauxhall, past Queen's Road and reached Clapham Jct. in six minutes, one minute less than schedule. There the 40 m.p.h. speed restriction was carefully observed and then full power was restored, but between Raynes Park and Malden the signals could be seen ahead showing double-yellow and then single-yellow, and in the far distance a red light. We were clearly on the tail of an electric train that would get in our way as far as Surbiton, so power had to be shut off and we coasted at 50 m.p.h., watching the signals turn to green as we approached them. Just before Surbiton, Driver Lane was able to open the throttle wide again, and Hampton Court Junction was passed in 15 seconds less than the 18 minutes allowed.

Filling the fuel tanks of No. 10000 at Windsor Sidings, Waterloo. Photographs by the author.

For the subsequent 37 miles to Worting Jct., No. 10000 was kept at maximum output, without any adverse signals. Woking Junction was the next timing point, due to be passed in 28 minutes for the 24¾ miles. We did it in 27 minutes 30 seconds, and it certainly looked as if we could keep on the right side of the schedule, but only by a small margin. It was not until we had passed Farnborough that the speedometer settled above the 60 mark. Through Fleet and Winchfield we maintained a steady 65-68 m.p.h., and passing Basingstoke we found we had 2½ miles to go and over four minutes in which to do it. Eventually we clocked 53 minutes at Worting, two minutes to the good. If we had not been checked by that electric train, we might have been three minutes to the good, but obviously could not have achieved a 51-minute timing, like the Southern diesels. However, there was not much in it!

On this showing, it was evident that the Midland diesels can handle the same trains as the Southern diesels, but that if it became necessary to recover lost time caused by track relaying or traffic congestion, then the Southern twins would probably show some superiority. The contest continues!

With the present tendency to tighten up the schedules of the principal passenger trains, the recovery of time needs greater effort than before. Consequently, even a small reserve of power in the locomotive is most valuable to a keen driver.

The de Havilland Series 1A Comet of the Royal Canadian Air Force which recently flew from London Airport to Uplands Aerodrome, Ottawa, in a flying time of 10 hr. 48 min. It was the first Comet aircraft seen in North America. Photograph by courtesy of the Royal Canadian Air Force.

Latest Jets for Photo-Reconnaissance

Proof of the importance attached by the Royal Air Force to photo-reconnaissance work is given in the announcement that three new types of P.R. aircraft have been ordered into production.

For short-range P.R. duties, the 2nd Tactical Air Force in Europe will receive a version of the Supermarine Swift to replace its present Meteors. If, as seems likely, these aircraft are unarmed, their supersonic speed should be of great help in eluding enemy opposition.

The medium-range Canberra P.R. aircraft is already in quantity production and will join Bomber Command's photo-reconnaissance units later this year. Finally, for long-range missions, the P.R. force will be equipped with a version of the Vickers Valiant jet bomber, carrying cameras and extra fuel instead of atom-bombs.

Helicopters for Power Line Patrol

Three Bell Model 47D-1 helicopters have been bought by the American Tennessee Valley Authority for power line patrol work. The order follows more than three years' experimental flying with an early type Bell 47, during which T.V.A. pilots and engineers have inspected regularly from the air some 8,100 miles of power lines over mountains, marshes, rivers and forests. Similar patrol work on the ground would be not only excessively expensive, but almost impossible in some districts. Furthermore, one of the Bell machines is being used for malaria-control spraying during the summer.

Getting Around at Schiphol Airport

In the November 1952 *Air News* I described a unique "railway train" built to carry visitors on conducted tours of Schiphol Airport, near Amsterdam, Holland. Another interesting vehicle put into service there recently by K.L.M. Royal Dutch Airlines is shown in the lower photograph on this page.

About 7,500 people are employed at the airport on aircraft repair and maintenance, and as their workshops cover a wide area bicycle traffic between hangars began to become embarrassingly heavy. So K.L.M. designed this new type of 'bus to dispense with the need for bicycles. It is a 20 h.p. diesel-engined open vehicle, with fire-engine type benches to carry 30 passengers; and it follows a prescribed route between the hangars, Freight Building, Terminal Building and Technical Area at a steady non-stop 7½ m.p.h. Passengers ignore the usual rule about boarding and leaving the 'bus whilst in motion.

London to France in 100 Minutes

A new Silver City Airways ferry service from London to Le Touquet saves about 40 min. by flying from Gatwick instead of from London Airport or Northolt. The old tiresome business of reporting at a London air terminal some 90 min. before take-off is avoided. Instead, passengers can catch a fast electric train from Victoria Station at 11.30 a.m. and arrive at Le Touquet in time for lunch 100 min. later, as the train pulls up at Gatwick only 100 yds. from the waiting aircraft.

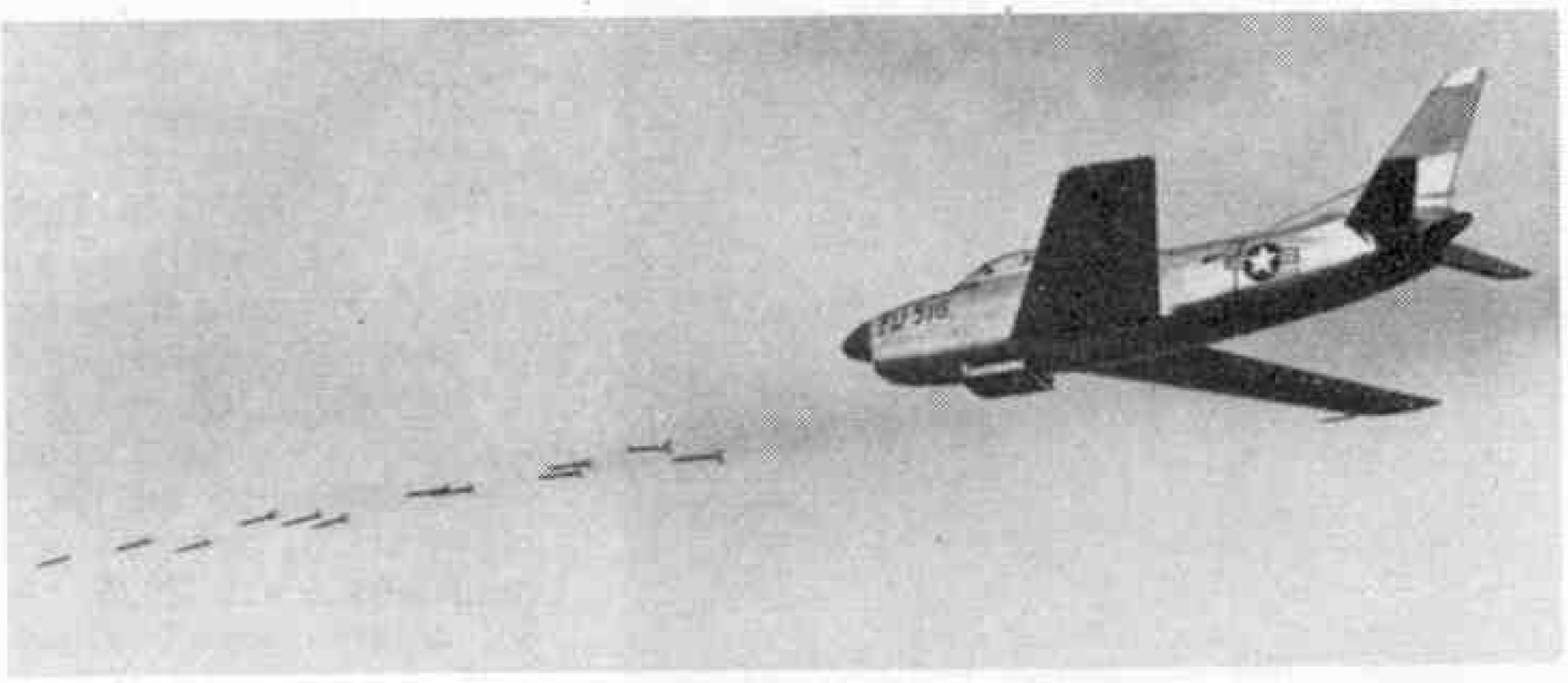
Silver City are operating the new service twice a day in each direction with their new, long-nosed Bristol Super-freighters. In addition to carrying 20 passengers, these specially developed ferry 'planes have room for up to three cars and a number of bicycles. Passenger fare is only £7 4s. 0d. return, and bicycles are carried for 7/6 each. The new service is proving exceedingly popular.

A novel type of Diesel-engined bus at Schiphol Airport, Amsterdam, where it is used to transport K.L.M. employees between the various hangars. Photograph by courtesy of K.L.M. Royal Dutch Airlines.

Sabre Secret Revealed

When Capt. J. S. Nash set up the present World Speed Record of 698.5 m.p.h. last November, it was announced that his F-86D Sabre jet fighter carried full rocket armament during its speed runs; yet photographs of the Sabre showed no signs of rocket racks or containers. The mystery has now been cleared up by the U.S. Air Force who have released photographs of the F-86D's unique rocket installation.

In contrast with the Starfire, which carries rockets behind retractable doors in its nose, and the Scorpion, which carries them in big wing-tip containers, the Sabre has a retractable rocket pack which extends below its fuselage only when the rockets are about to be fired, as shown in the accompanying photograph. At all other times, the bottom of the pack lies flush with the fuselage skin and, therefore, does not detract from the aircraft's speed. The pack contains 24 2.75 in. Mighty Mouse rockets, a hit from any one of which can destroy a heavy bomber.



North American F-86D Sabre jet fighter, flying over a military firing range, launches some of its deadly rockets from a retractable rocket pack under the fuselage. Photograph by courtesy of North American Aviation, Inc., U.S.A.

McCulloch Helicopter Certificated

The U.S. Civil Aeronautics Administration have approved the little McCulloch MC-4 helicopter for commercial use. This machine, illustrated below, thus becomes the first tandem-rotor helicopter ever licensed to carry civilian passengers.

Simplicity is the key-note of the MC-4's design. Its 200 h.p. Franklin engine drives the rotors through simple Vee-belts, which helps to damp out vibration; and the all-metal rotor blades are completely interchangeable, so that they can be replaced individually if damaged, instead of in sets of three. Rotor diameter is 23 ft., and the MC-4 has an overall length of 32 ft. 5 in. Loaded weight is 2,300 lbs., and it has sufficient fuel for 200 miles cruising at 75 m.p.h., carrying two people.

The McCulloch MC-4, the first tandem-rotor helicopter to be licensed in the United States for commercial use, carries its first civilian passenger. Photograph by courtesy of McCulloch Motors Aircraft Division, U.S.A.

Comets for S.A.A.

From October of this year, B.O.A.C. and South African Airways will operate Comets jointly on the *Springbok* route between London and Johannesburg. The two airlines have been in successful partnership on the route since 1945, but except for a short period at the outset, when both used York aircraft, they have never flown the same type of air liner.

At present, each airline is operating a thrice-weekly service, B.O.A.C. with Comets and S.A.A. with Constellations. After October, frequency of the Comet services will be increased to four times a week; and these will be regarded as first-class services, while the "Connies" will be converted for tourist-class travel. The Comets hired from B.O.A.C. by S.A.A. will be flown by South African crews and carry S.A.A. insignia.

No Joy-Ride

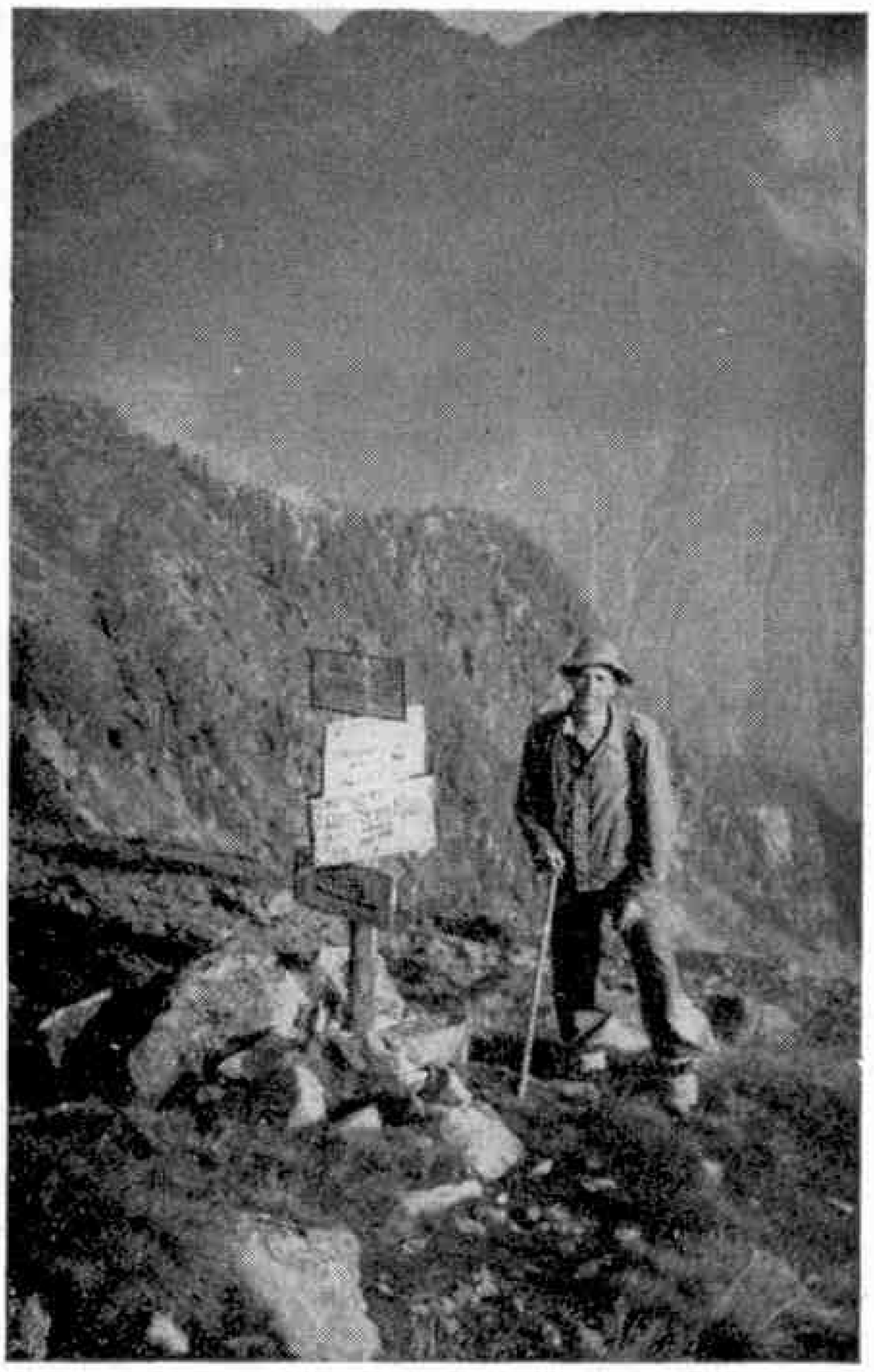
The American magazine *Time* has given a dramatic account of test pilot Bill Bridgman's first flight in the still-secret Douglas X-3 supersonic research aircraft.

Apparently, a variety of troubles were encountered, including "acting up" on the part of the aircraft's turbojets. At one stage, Bridgman commented to another pilot who accompanied him in a Sabre: "This thing doesn't want to stay in the air." He had to land it "blind" at well over 200 m.p.h. under instructions from the Sabre pilot, as view from the X-3's flush cockpit is virtually nil. Afterwards, Bridgman summed up the X-3 as "a nasty little beast"—but test flights will continue and speeds of over 1,500 m.p.h. are expected to be reached in due course with more powerful engines.

An Aircraft Every Two Hours

One of Britain's biggest aircraft factories—the de Havilland works at Broughton, near Chester—is turning out a complete aeroplane every two working hours.

The factory builds Dove and Heron light liners, Vampire and Venom jet fighters and trainers, and is making good progress on production of the Comet Series 2 jet air liner. Aircraft coming off the assembly line at the present time are destined for 11 different overseas countries, as well as Britain.



Walking Among the Hills

By Bernard Llewellyn

IN a world that is becoming increasingly dearer to live in, one tends to cherish those activities that can still be indulged in cheaply. We cannot all go yachting or motoring around Europe; and few of us will ever manage to go on exciting expeditions to high mountains. But most of us can walk and discover on foot the paths that take us to the mountains.

Make no mistake about it, altitude does make a difference. Strolling along country lanes, exploring old churches, and following the course of an enchanting river are delights known to every lover of the open air. But hill-walking is a different, more rigorous pastime, with its own special joys and its own dangers.

Hill walking is more arduous than strolling through the countryside, but is not as strenuous as mountaineering. It has an enchantment of its own, and in this article the author gives a splendid account of its delights. These he has experienced for himself in many countries, including the Austrian Tyrol, where the photograph on this page was taken.

It is different again from mountaineering. It is true that the walker in hilly country will have an occasional scramble up the more accessible crags; but unless he is a fool he will avoid slopes that require mountaineering techniques and equipment if they are to be safely negotiated. Every year we read in the newspapers of deaths on British hills, and often the bodies are those of ill-equipped walkers who think they will show their "skill" on crags that even the experienced climber treats with respect.

Judgments may differ concerning the point at which walking becomes mountaineering, and it would be profitless to pursue the matter here. It is enough to say that Everest expeditions begin by walking out of Darjeeling, through the tea plantations on the foothills, or out of Katmandu; but at some point before their members reach 28,000 ft. they are engaged on some rugged climbing!

The whole of this article could easily be devoted to practical hints for hill-walkers on such important topics as boots and waterproof clothing; for equipment is vitally important and can make all the difference between an enjoyable week's holiday and seven days' hard labour. I once went walking in Austria with an Indian student who was dressed as if for a walk down the Strand, in a lounge suit, mackintosh, and a pair of patent leather shoes! He had no rucksack; but carried his belongings wrapped up in a towel which kept coming undone at the most inconvenient moments.

This was an extreme case of ill-preparedness; only the fact that the weather was excellent prevented unpleasant consequences. All I want to do here is to stress the obvious need for warm clothing, good waterproofs and comfortable boots. Extra sweaters and slacks are virtually indispensable in uncertain weather. The hills can get unpleasantly cold. Without such essential minima in the way of preparations hill-walking can be miserable indeed.

Even so you must be prepared to get wet—and you can get wetter on an exposed hill-side than in most other places. One Easter I went on a walking tour in the Lake District—that paradise for British hill-walkers—staying at youth hostels. Most days we had heavy rain, and even when the hostel drying rooms were functioning properly, boots had to dry out

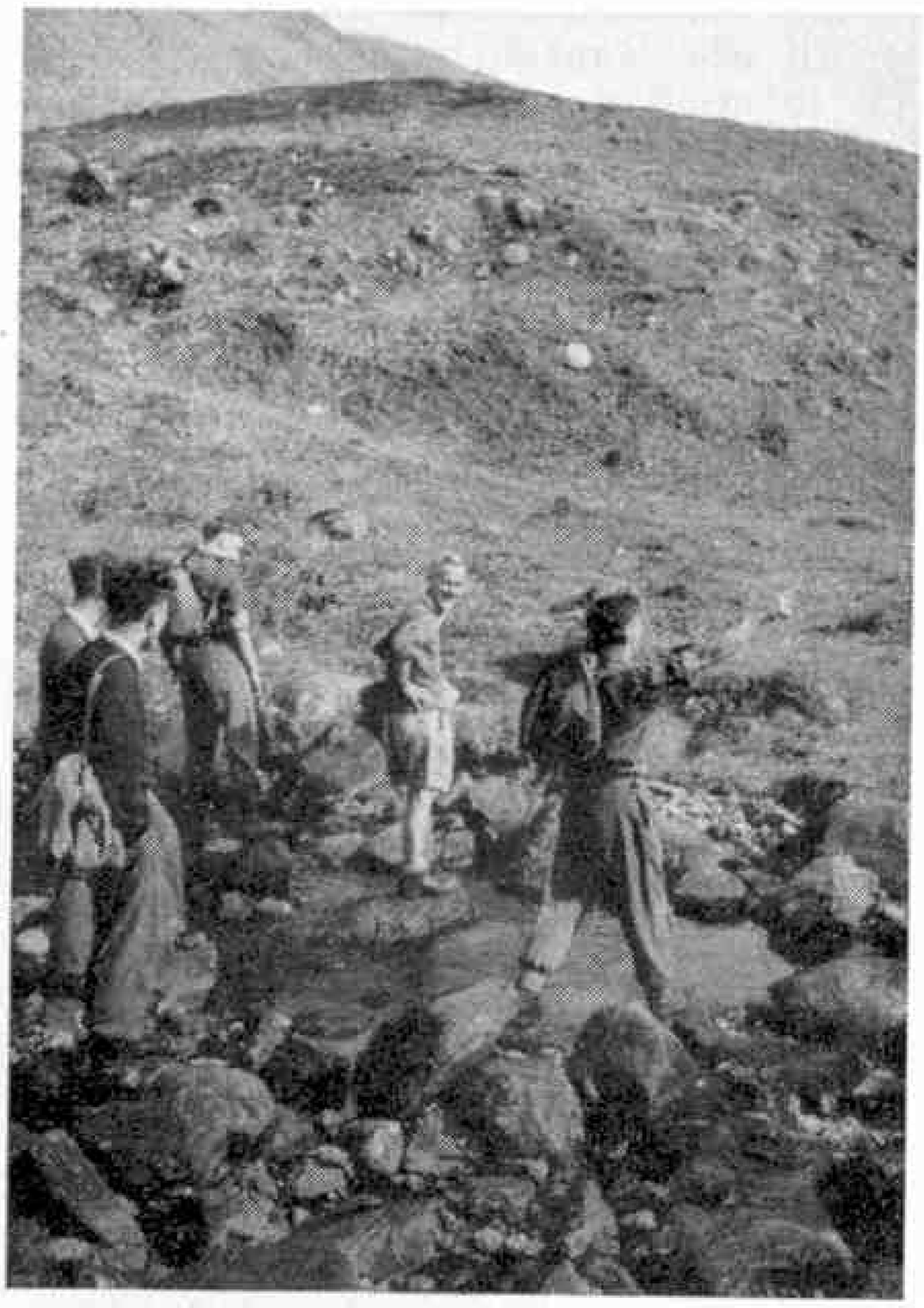
on one's feet the next morning. But I was in excellent company, and the rain could not damp our spirits as easily as our clothes.

Whatever I forget about this trip, I shall remember a day of rain and mist in which we walked to Wasdale Head, on over Black Sail Pass, looking in at the hut that served as a hostel, and across the hills to Honister, with the wind billowing under my cape and making me lose my balance on the spiralling uphill track.

Within the coastline of Great Britain is to be found magnificent country for the hill walker. If you are a prey to moods, much of it is not country to be traversed alone, especially in the autumn and winter, when rain and cold make the unsheltered ranges of the island lonely and inhospitable places. For the fact is that the hills nearer home can be every bit as bleak as the high snow mountains of other lands. Even climbers familiar with the Alps and the Himalayas have written of the grandeur and dangers of British peaks in bad weather.

Some of you may have been lost in the Black Mountains of Monmouthshire on a wet night as I have; or have trudged up Ingleborough and Pen-y-Ghent in snow that hid the footpaths and the landmarks of the Yorkshire moors beneath a white blanket; or have experienced the terror of losing the path in the mist on the boggy summit of Kinder Scout. It is better to be with others than alone on bad days in the mountains.

Everyone who does much hill-walking will know these bad days. But there are plenty of compensations for the enthusiast. It is quite a stiff scramble to reach the



A hill walking party on the way to Scafell Pike.

summit of England on Scafell Pike. The last stretch is over boulders and loose scree, the path for walkers marked with splashes of paint. Yet there at the top is the reward; the view on one side of Great Gable, and on the other of the distant stream of the Esk making its way to the village where you will spend the night.

Ridge walking, with the view stretching away beneath you on either side, is a delightful way of spending a day. In gentle rolling country like the South Downs you can follow the track along the crest of those wonderful grass slopes, and know that you are treading the "roads" of Saxon England, when impenetrable forest filled the valleys.

In our time, of course, it is the Youth Hostels Association that has encouraged the youth of Great Britain to take to the hills. Good cheap board and pleasant company at the day's end make hill

The Franz-Senn Hutte, in the Austrian Alps.

walking, at least in this country, possible for all who want to sample its pleasures for themselves. The excellent one-inch Ordnance Survey map gives a picture of the landscape to those who have learned how to read it. It suggests to the initiated the best paths and the most rewarding views, and identifies queer-shaped peaks and saddles on the horizon. More important still, it points tired bodies at the end of a long day back to the nearest hostel, or village inn.

Among the high mountains of Europe, cable railways and chairlifts are invaluable aids to the walker who, pressed for time, wants to cover as much ground as possible. They will lift him in a twinkling from flower-bedecked meadows to the white silence of the snow glaciers and the ice-cold waters of high mountain lakes.

Above is a scene at Hawkshead, in the Lake District. On the right hill walkers are on the last lap of a day's journey, approaching Keswick.

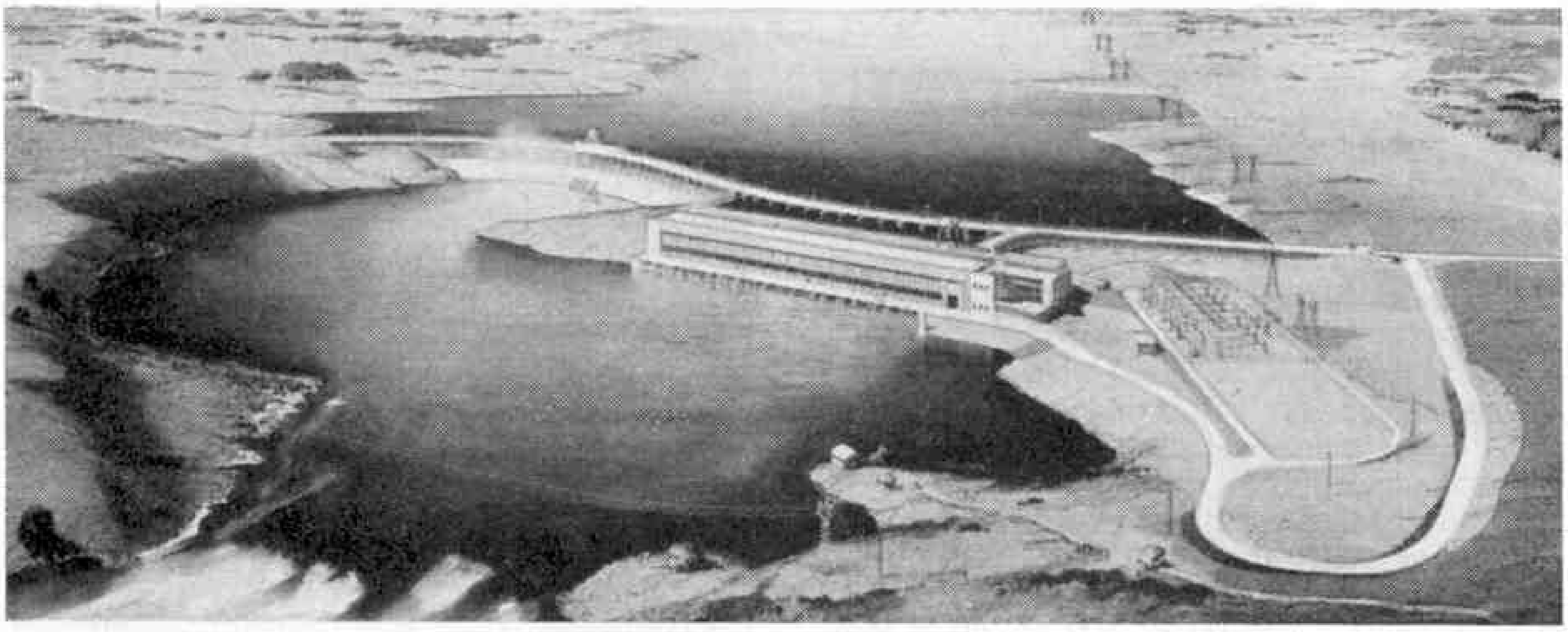
Switzerland is, par excellence, the land of the mountain walker. The paths are clearly indicated and distances marked, most usefully, in the number of hours the average walker would be expected to take to cover them. By chairlift in half an hour the walker can be taken some 3,500 ft. above Grindelwald, and set down on a footpath that must command one of the finest views in Europe. Across the valley is the huge rampart of the Bernese Oberland wall, its white-capped peaks, with terrifying names, clawing at the clouds.

Or you can get in a similar chair at Zermatt and be whisked up to the snowline where you can see, in still greater detail, the terrible cliffs of the Matterhorn. In France, in places like Megeve and Chamonix, and in Austria at tourist cities like Innsbruck, cable railways give walkers a good start on the real work of the day.

Even when the area is without hostels, excellent shelter is provided by the mountain huts. The word "hut" is apt to be misleading, for many of these buildings are as large as a medium-sized hotel and look as solid as a stone fortress. In bad weather indeed they need to be solid. Snow piles up in great drifts against the doors and windows, and but for the heavy stones strategically placed on the roof the gales would be liable to tear it open to the skies. Often the walls are of double thickness, made out of huge blocks of stone that in many cases have had to be carried up from the valley below.

The Swiss, Austrians and the other builders of mountain huts built them as refuges for walkers and climbers, and it is a great delight to come to one at the end of a tiring day. One summer, with half a dozen friends, I was walking in the Austrian Tyrol south of Innsbruck. From the village where the bus dropped us it was a steady climb up towards the snow peaks that were our destination. Our wind and legs were not yet in very good shape—for this was the beginning of our holiday, not the end of it—and I'm sure none of us minded coming in sight of the Franz-Senn Hutte, 7,095 ft. above the sea. As it happened, we had the huge hut entirely to ourselves and on the beds were billowy flock eiderdowns which would have kept you warm through the Ice Age itself.

This life among the hills and mountains is grand. Oil your boots, pack your rucksack, and see for yourself!



Power for Uganda

The Owen Falls Hydro-Electric Scheme

By A. D. Monkhouse

UGANDA is a British East African protectorate lying on the equator between Kenya on the East and the Belgian Congo on the West. To the North it borders on the Sudan and to the South on Tanganyika and Lake Victoria, one of the largest lakes in the world and of approximately the same area as the whole of Scotland.

The outlet from Lake Victoria at Jinja on the northern shore is where the White Nile begins its long journey through Uganda, the Sudan and Egypt to the Mediterranean.

Uganda has for many years been a prosperous country, deriving most of its wealth from cotton, coffee, tea, rubber and various other crops, but in recent years moves have been made to establish industries within the Protectorate. A cement factory will shortly commence production, copper mining on a commercial scale is to begin, investigation of the mineral wealth of the Eastern Provinces is taking place, a textile factory is to be built, and various other projects are being considered. As Uganda is some eight hundred miles from the nearest port of Mombasa, on the Indian Ocean coast of Kenya, all imported fuel is dear, and as there are no coal mines or oil wells, a source of power to supply the new industries is an urgent requirement.

As early as 1907, Mr. Winston Churchill, after a visit to East Africa during which he watched the Nile flowing out of the great lake at Jinja, wrote in a book that he subsequently published that the wasted power of so much water could be well used for the development of the country.

It was not until 1947, however, that it was decided to exploit the water power resources of the country. In that year the Uganda Government decided to build a large electric power station at Owen Falls, a short distance from where the Nile leaves Lake Victoria. The river at this point runs between high banks and drops over a series of relatively low falls, of which the most famous are the Ripon Falls, where the explorer Captain Speke became the first white man to see the source of the Nile ninety years ago.

The illustration at the head of the page shows an artist's impression of the dam and power house now being erected at Owen Falls, Uganda. The Falls are on the Nile, a short distance below the point where the great river leaves Lake Victoria, and on completion of the scheme hydro-electric power will be available for the growing industries of Uganda, which has no coal cr oil.

In order to generate hydro-electric power it is necessary to build a dam to hold back the water and create a sufficient depth to provide pressure where the water is drawn off at the bottom of the dam. The water so drawn off is fed into a turbine that drives an electric generator. By building a dam a short distance down stream from Lake Victoria it is possible to create a depth of water of over sixty feet at the site of the power station without raising the level of the lake, bringing the level at the dam site up to that of the lake.

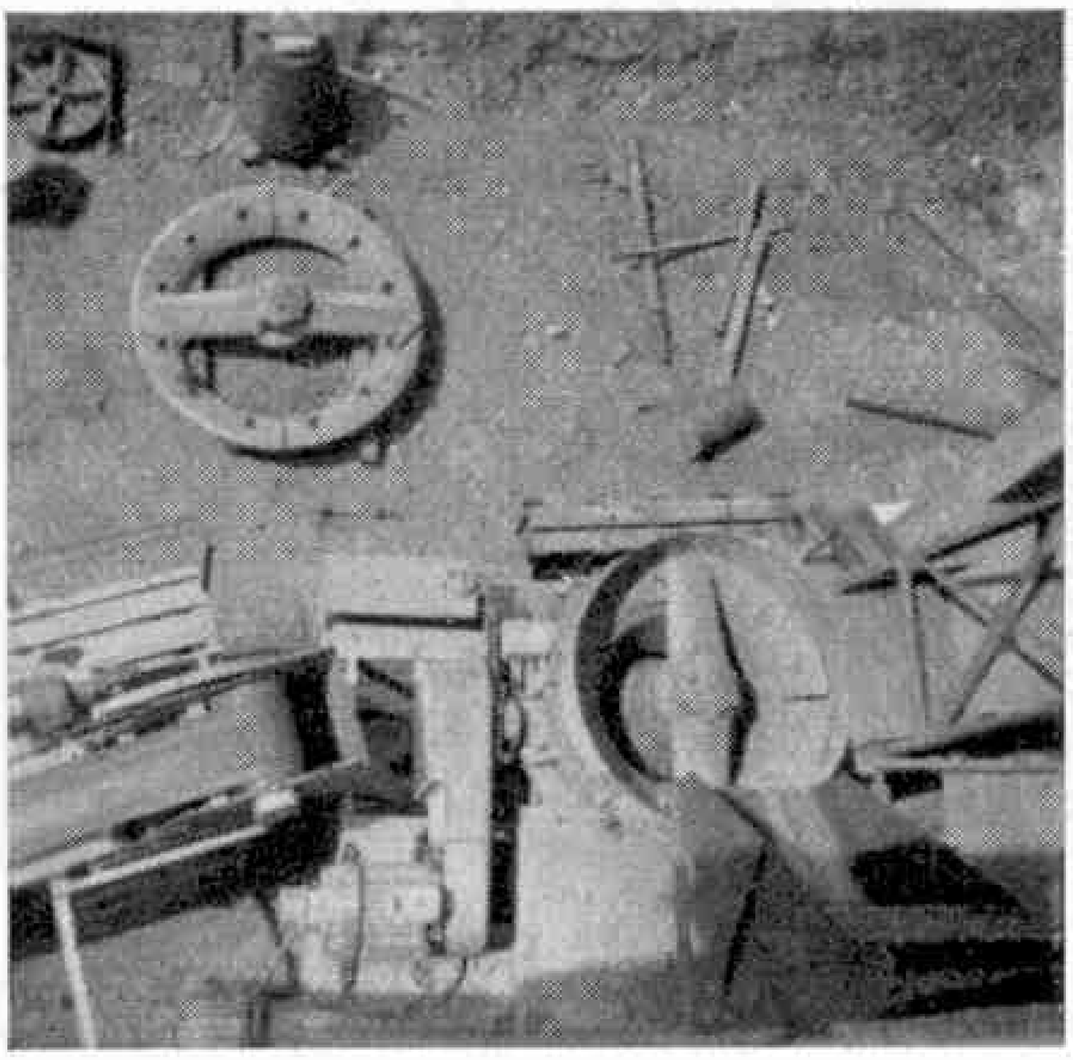
The foregoing explanation deals with the barest essentials of the scheme and of hydro-electric generation generally, and it will no doubt be of special interest to readers to know that before decisions were

taken regarding the exact details of the design for the Owen Falls dam many tests were made with scale models of the structure at the Imperial College, South Kensington.

The Nile at Owen Falls is a fast flowing river and it is not an easy task to dam it, for it must be allowed to continue running while the work is being done. In very broad terms this is being achieved in the following manner. Starting from one bank large cribs made of poles are placed in the river to surround an area of water and these cribs are filled with stone and earth and protected with sheets of steel piling. The water inside the enclosed area is then pumped out. A portion of the dam is built of concrete inside the dewatered area, gaps being left in the solid concrete wall.

A second piece of river is then enclosed with cribs and the process repeated further out in the stream. As work proceeds the crib enclosures are removed from completed portions of the dam and the river runs through the gaps left in the concrete work. When the whole river has been spanned in this way the gaps are filled in with more concrete, with the exception of a few in the centre of the main dam which are fitted with sluice gates and through which excess water can be released at any time.

In the building of the Owen Falls dam and power station some 320,000 cubic yards of rock and earth will be excavated and about 250,000 cubic yards of concrete will be used in the construction. The dam will have a maximum height of 85 ft. and a road will be carried across the river on the top. The total length of the dam will be over 900 yards—more than half a mile.



An overhead view of part of the Owen Falls dam site works, showing the stone crusher. On the right are the chutes through which rock enters the crusher; on the left one of the belts that deliver the crushed rock can be seen.

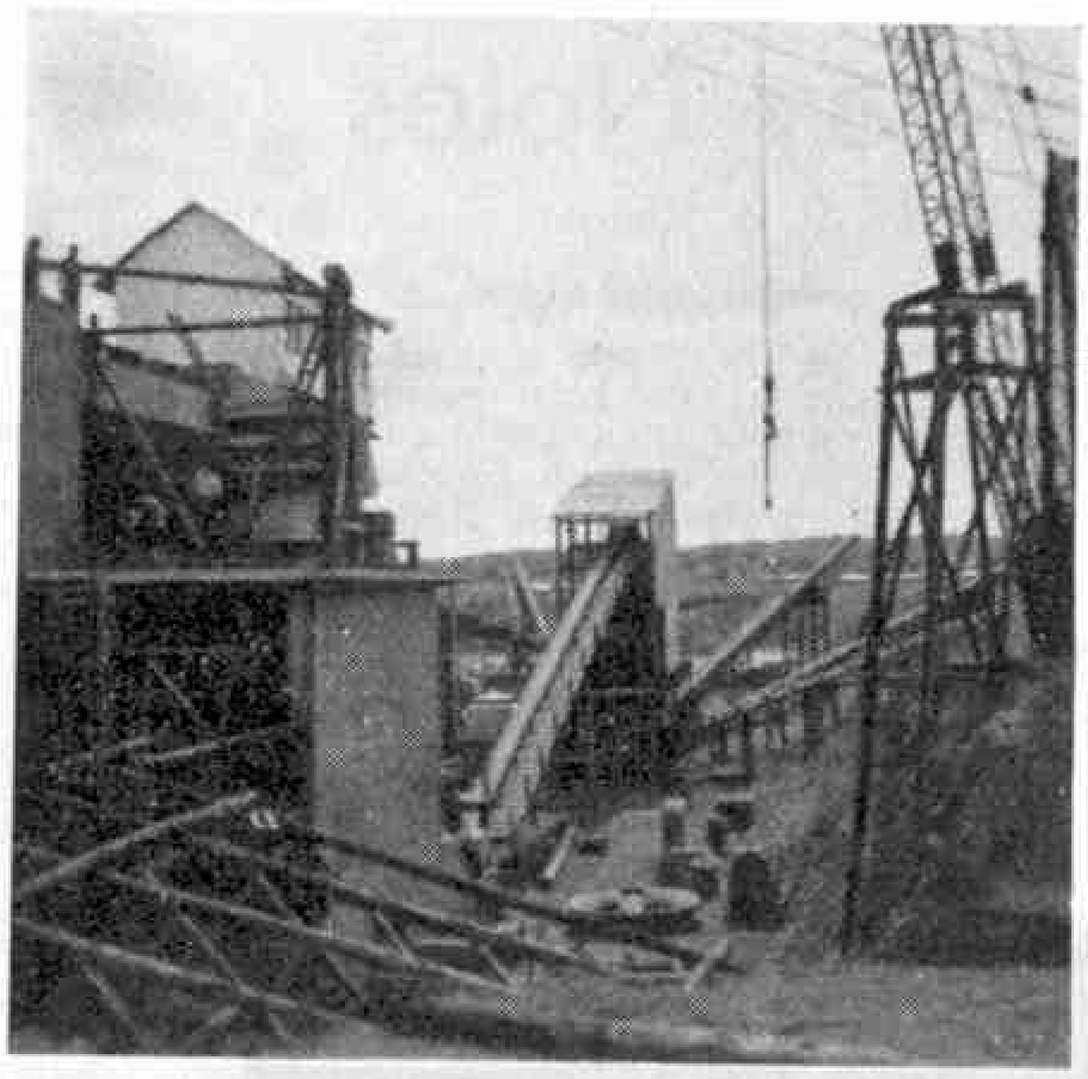
A vast amount of equipment was required for the carrying out of the work—light railway material, stone crushers, excavators, dumper trucks, concrete mixers on a grand scale, cranes, rock drills, masses of steelwork and every sort of civil engineering equipment, all of which had to be brought to East Africa by sea and sent up from the coast on the single track metre gauge railway of the East African Railways and Harbours Administration.

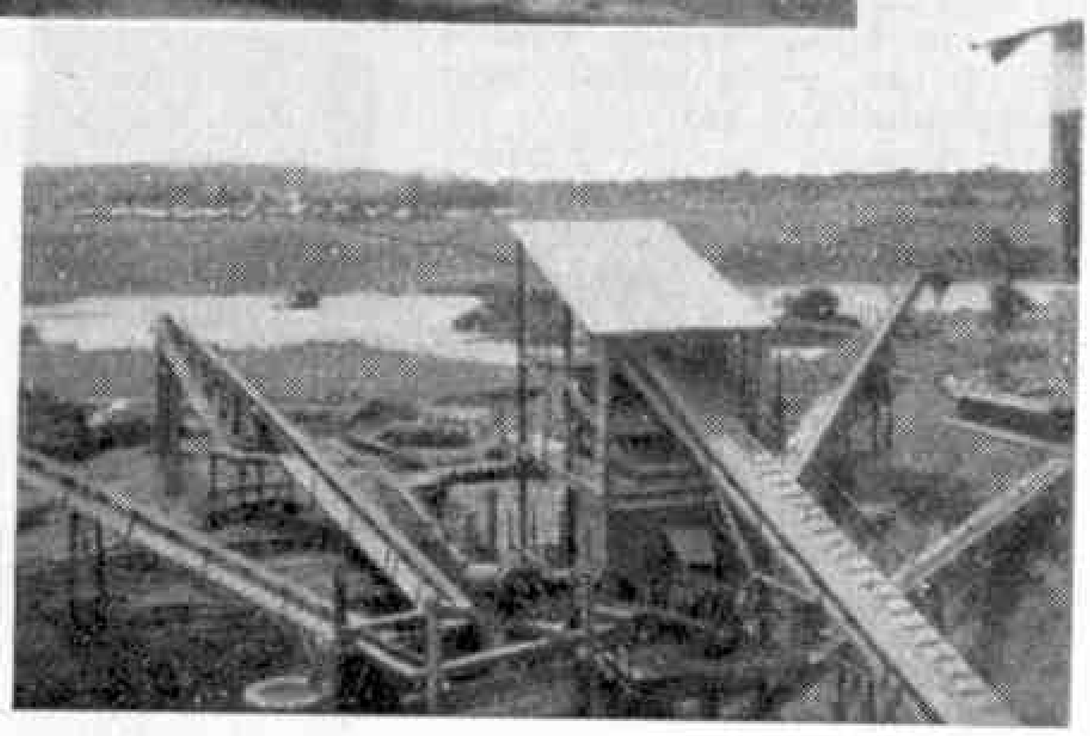
While much of the material for the actual construction work is available locally, many thousands of tons of reinforcing steel are being imported, and all the machinery for the power station and great quantities of allied equipment—sluice gates, gauges, control panels, transformers, switchgear, etc.—is coming to Uganda across the sea and up from the coast by rail.

Until now the cement required for the concrete work has all been imported, but in the later stages it is hoped to use cement produced by the new factory at Tororo some seventy miles East of Jinja. Considerable prospecting was necessary to find a source of sand suitable for high grade concrete making in Uganda and this was eventually found on the shore of Lake Victoria, from where it is brought by a fleet of barges to Jinja.

Much of the rock excavated on the site to make way for the dam foundations

The plant for weighing, batching and mixing concrete. The main conveyor for materials enters at the top, the cement entering through the tube running up the left of the tower.





These illustrations show the rock grading and crushing plant. On the left of the upper one is the main crushing plant, with control room above. In the centre is the grading plant, with the main conveyor from the crushers entering at the top. Distributing belts for graded rock radiate from the base of the plant as seen in the lower illustration.

and the power house is being subsequently used for concrete making. After extraction by blasting, the huge pieces of rock are passed through crushers and then graded into various sizes by a special plant built on the site for the purpose. The various grades of stone pass by conveyor belt from the grading plant to concentration heaps. From these miniature hills of graded stone the operator in charge of the concrete weighing, batching and mixing plant is able by touching a switch in the control room to send exact quantities of various sizes of stone by conveyor belt to the huge concrete mixer. Cement is fed into the mixer in measured quantities mechanically.

The dam will be officially opened next year by Her Majesty the Queen. With the Duke of Edinburgh, Her Majesty will arrive at Entebbe Airport from Aden to begin a tour of East Africa on 28th April 1954 and will open the dam on the following day.

The Friendly Bells

Locomotive bells are practically unknown to most railway enthusiasts in Great Britain, although many must have seen the bells that G.W.R. No. 6000 King George V and L.M.S. No. 6100 Royal Scot brought back from the States. But they have long thrilled those of North America, and this little story from the Santa Fe Magazine, published by the Atchinson, Topeka and Santa Fe Railway, gives us some idea of what they have meant in the States ever since the earliest days of railways there.

TO many of us the locomotive bell stirs memories of years long gone by when we stood on the platform of the little railway station back home eagerly awaiting the arrival of our favourite cousin or aunt aboard the train, or when we were about to enjoy that greatest of all boyhood thrills—a ride on the train! Whatever the occasion, the clanging of the locomotive bell spelled excitement; it meant that we were at the scene of action and things were happening. It was always a big moment when the locomotive bell was ringing, just as it was when the clang of the fire engine was heard. And even to this day the sound of a locomotive bell sets us a-tingle and stirs memories of those great moments of boyhood days.

From the earliest days of railroading the locomotive bell has been sounding its warnings of approaching locomotives and trains, and there is no telling how many thousands of lives have been saved and how many homes have thus been kept happy by its appeals to caution.

The earliest use of bells on locomotives is not a matter of record, but probably the bell antedated the steam whistle on many pioneer locomotives. One of the early problems of the bell-makers was to prevent bells from cracking. Copper and tin are the basic metals most commonly used in the manufacture of locomotive bells, but numerous alloys and metals have been experimented with.

In the 1890's some bell-casters placed freshly-minted silver dollars in the molten copper and tin in the belief that a sprinkling of the precious metal prevented cracking or increased the tonal qualities of the bell. About the same time iron and steel bells were tried out. Experiments were also made with bells of glass, the tone of which was very delightful, but bells of this material were too brittle for use by the railroads.

Locomotive bells usually far outlive the locomotives. In recent years, with many steam locomotives being supplanted by diesel engines, which are equipped with an entirely different type of bell signal, several railroads have followed the practice of presenting bells no longer needed to churches and schools, where they will continue to peal forth their friendly messages —not as a warning of approaching trains, but as a summons to worship or study. Their mission changes, but it is still in the interest of happier homes.

Railway Notes

By R. A. H. Weight

Small D-E Locomotives with Big Power

More of British Railways' first batch of diesel-electric shunting 0–6–0 locomotives have been completed at Derby, the numbers running from 13000 to 13024. Allocation is five each to the Scottish, Southern and Western Regions; ten to the London Midland.

News from the London Midland Region

New class 4 2–6–4T No. 80062, built at Brighton, is allocated to Kentish Town, 14B, and 350 h.p. diesel-electric shunters numbered 13021-2, respectively to Walsall, 3C and Cricklewood, 14A. Saltley 21A, and Watford, 1C, also have new 2–6–4Ts, Nos. 80063 and 80064 respectively.

Among the locomotives condemned for withdrawal are 4–4–0 compound No. 41057 and one of the veteran former North London Railway outside cylinder 0–6–0 shunting tanks, No. 58240. Standard class 5 4–6–0s are in hand at Derby. No. 42825 and four other Hughes class 5 2–6–0s are being fitted with rotary cam valve gear.

An observer on the Furness section near Barrow reported recently that 4–6–0s of the Jubilee and Royal Scot classes noted on principal trains included Nos. 45678 *De Robeck*, 45722 *Defence*, 46128 *The Lovat Scouts* and 46161 *Kings Own*. Class 5 4–6–0s and 2–6–4Ts also share passenger train working there.

Round about Whitsuntide the Willesden class 5 4–6–0 No. 45404 visited the Sussex coast on two consecutive days with through excursion trains from the Tring-Watford area, the respective S.R. terminals being Eastbourne and Hastings. Nos. 45064 and 44875 were also seen at Eastbourne. Engines of this numerous type have also worked through to destinations on the Eastern and North Eastern Regions. When these notes are read the holiday season will be at its height, affording many opportunities of watching heavy traffic as well as unusual locomotive duties.

During the first week of the accelerated express services introduced on 8th June when summer timetables came into operation, we are informed that many of the fast trains on the London–Liverpool run gained time and in some cases arrived up to eight min. early. There were good reports on the whole regarding the speeded-up Manchester–Liverpool 45-minute service including two stops, over the Cheshire Lines route, and from other parts of the system.

Spying Strangers on the Southern

Reference was made last month to the interesting variety of locomotives recently on loan, in most cases for short periods, to the S.R. while a number of Pacifics were withdrawn for structural examination. During some hours on the main line between Woking and Waterloo, I saw L.M.R. class 5 4–6–0s, a V2 E.R. 2–6–2, and a Britannia normally stationed at Old Oak, W.R., as well as the two ex-L.M.R. diesel-electric main line locomotives, Nos. 10000–1, working hard on London to Exeter or Weymouth and back turns, being now allocated to Nine Elms Depot. There were also representatives of S.R. Merchant Navy—five different engines—West Country, Lord Nelson, King Arthur, Remembrance, S15, H15, H16, 0395, 700, M7 and H classes.

An official list showed that six V2 E.R. 2–6–2s were received on loan and stationed at Nine Elms. Fourteen B1 4–6–0s belonging to sheds scattered over the Eastern, North Eastern and Scottish Regions went to Stewarts Lane, London, working mainly on the Chatham route but also with specials to Brighton and Newhaven. Five Britannia 4–6–2s from the Western Region were at Salisbury or Exmouth Junction, Exeter, two from the L.M.R. on London–Dover boat trains. To complete a total of 37 locomotives were seven L.M.S. type and three B.R. class 5 4–6–0s allocated to Nine Elms and hailing from widely-scattered L.M.R. sheds.

With these unaccustomed steeds Southern drivers and firemen sometimes did very well. For example, with powerful Green Arrow 2–6–2s on two of the fastest heavy London–Bournemouth expresses between Waterloo and Southampton without stop, No. 60908 with 460 tons southbound and No. 60893 with about 520 tons gross on the northbound *Bournemouth Belle*, made the runs each way allowing for signal checks in about 86½ min. net for 79½ miles, within schedule. On the latter trip speeds over 75 m.p.h. were maintained for a long distance between Brookwood and Surbiton and there was a good climb up the lengthy gradual ascent past Winchester and Micheldever.

The down Broadsman of the Eastern Region running into Ipswich. The engine No. 70007 Coeur de Lion displays a special Coronation decoration in addition to the standard train headboard. Photograph by R. E. Vincent.

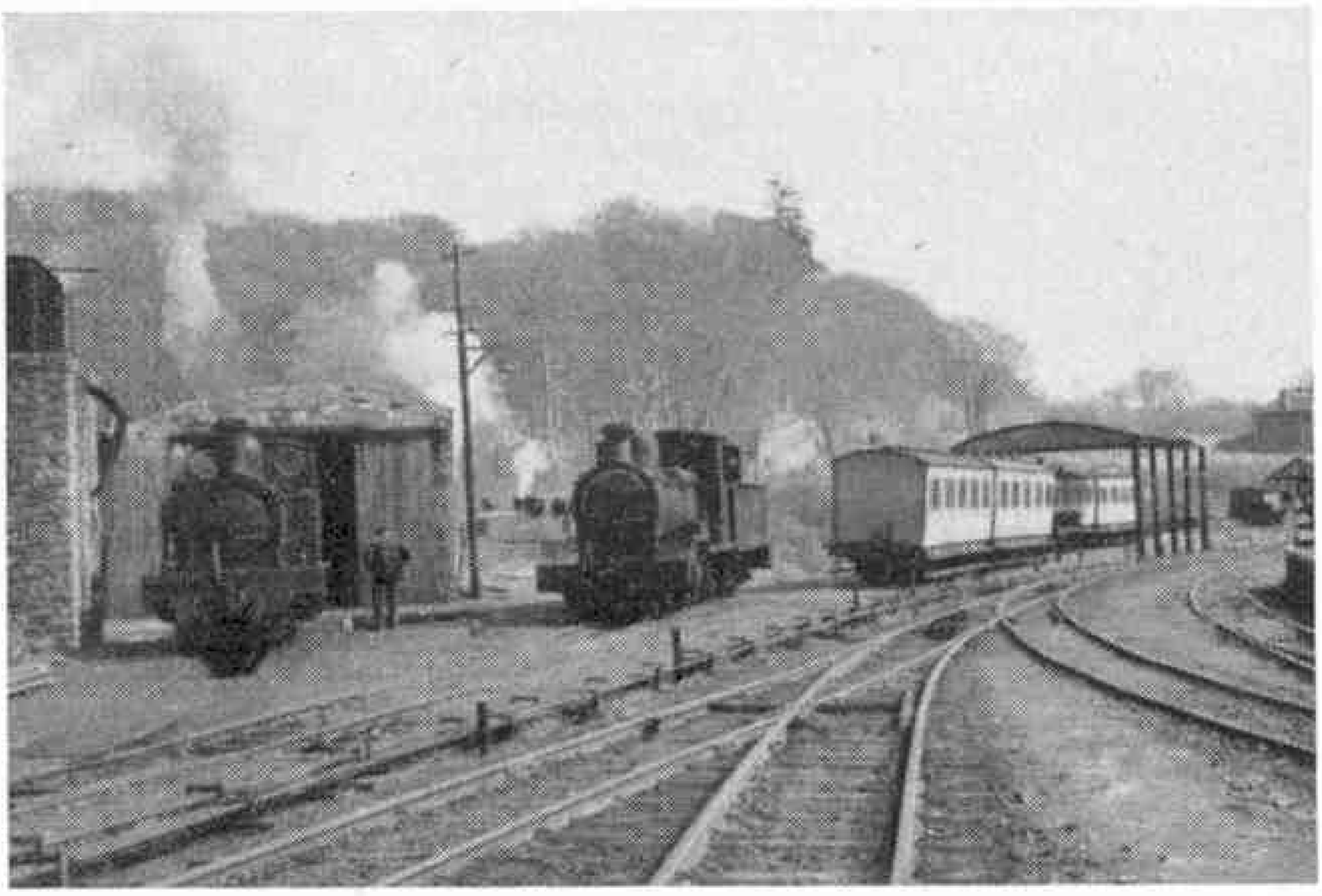
High Speed on the East Coast Route

The Eastern and North Eastern Regions are in the forefront this summer as regards higher speeds and start-to-stop runs over long and short distances at more than a mile-a-minute average. The fastest train in Britain, the 7.50 a.m. businessmen's express from London to Leeds and Bradford, covers the 124 miles from Hitchin to Doncaster, start to stop, in 113 minutes at an average of 65.9 m.p.h., providing the quickest-ever service of 3 hrs. 21 min. from King's Cross to Leeds, including stops and without supplementary fare. The time is slightly longer in the opposite direction, 3 hrs. 25 min., with a 64.1 m.p.h. average along the Doncaster–Hitchin stage. In each direction during the first week the overall London–Leeds time was cut actually to about 3¼ hours, on the best runs, equalling the non-stop time of the accelerated and much heavier *Queen of Scots*. The

latter express has also improved considerably upon the new fast timing, having been noted in charge of an A1 4–6–2 approaching Wood Green, 5½ miles from King's Cross, about 7.30 p.m., say 12 minutes early; the 180 miles from Leeds, including quite a number of slowings, were covered in no more than 175 minutes.

The fastest long-distance run without stop is scheduled to the *Tees–Tyne Pullman*, which now leaves Newcastle 10 minutes later, and is due in King's Cross 10 minutes earlier than last winter. The 232¼ miles from Darlington to London are allowed 229 minutes. Like all the working times for expresses towards King's Cross, this includes a margin for recovering delays, so that north of Hatfield the passing times for the quickest trains are very fast indeed, necessitating speeds between 80 and 90 m.p.h. at suitable points.

I have been fortunate to receive a full copy of the log of the exciting first run up on the summer schedule recorded by Mr. D. S. M. Barrie, M.B.E., when the load of eight Pullman cars was carried weighing 330 tons. The A4 streamlined Pacific was No. 60015 *Quicksilver*, one of those originally constructed for the high-speed service on that route called the *Silver Jubilee* in 1935, and was in charge of Driver Simmons and Fireman Mayes, King's Cross. In spite of a number of checks for signals or track repair work, as well as the normal speed reductions over water troughs and to a greater extent through principal stations, from all of which the engine picked up speed brilliantly, the train was punctual at Potters Bar, having then covered 219½ miles in 205 minutes. Not needing the recovery margin, after gently running through the suburbs the train stopped in King's Cross six minutes early at 1.52 p.m. The overall average speed was 62½ m.p.h. and the net time, if no out-of-course slowings had occurred, no more than about 210 minutes. The maximum speed was 90 m.p.h. and was not allowed to exceed that limit; the minimum at the top of the lengthy rise to Stevenage was 67 m.p.h.



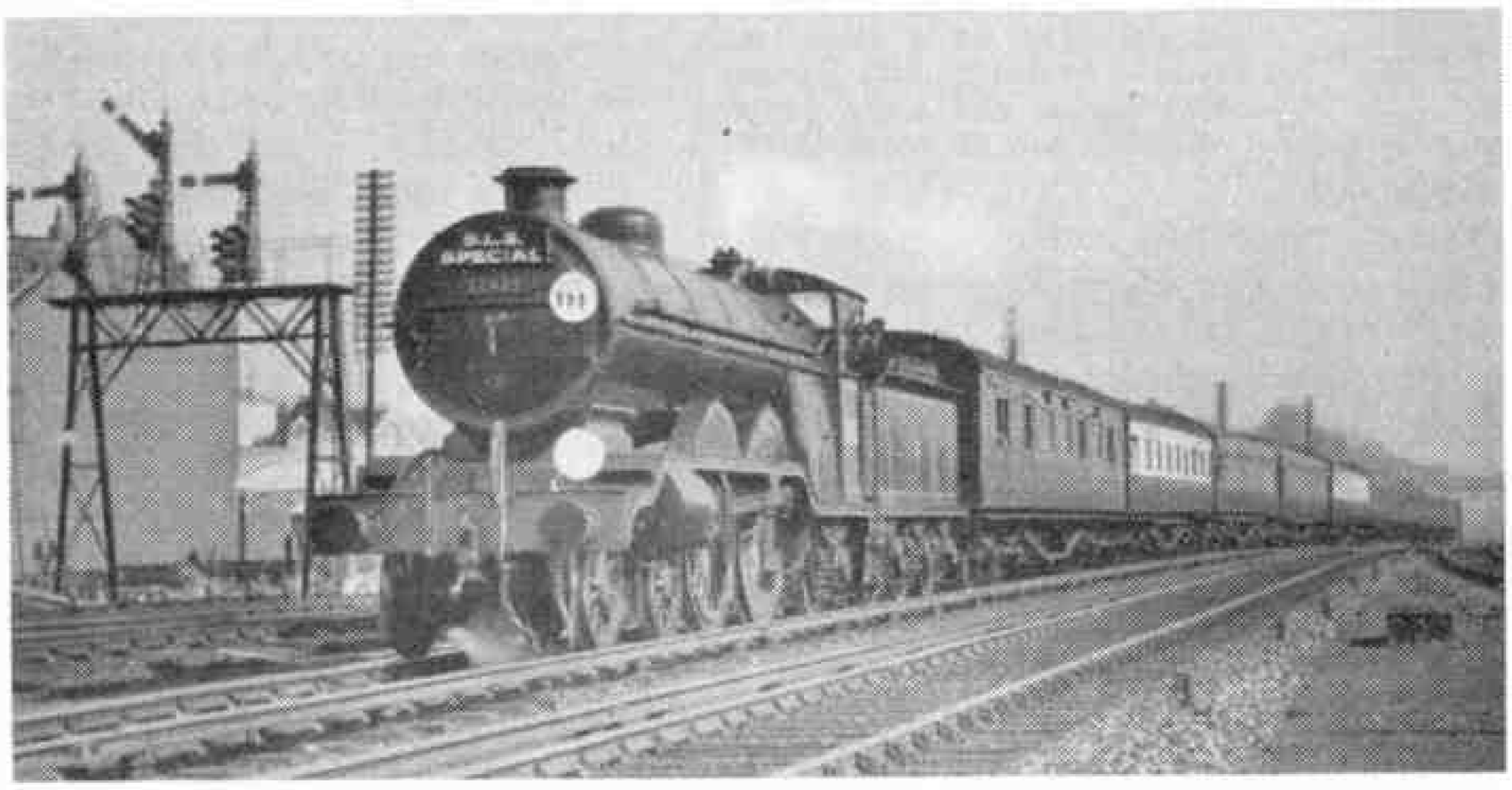
Locomotive activity at Letterkenny, Donegal. The engine on the left is on the turntable and to the right of it is a 4-8-0, the largest narrow-gauge engine in the British Isles. Between them, in the background, a County Donegal Joint engine is shunting. Photograph by D. Chaplin.

Scottish Tidings

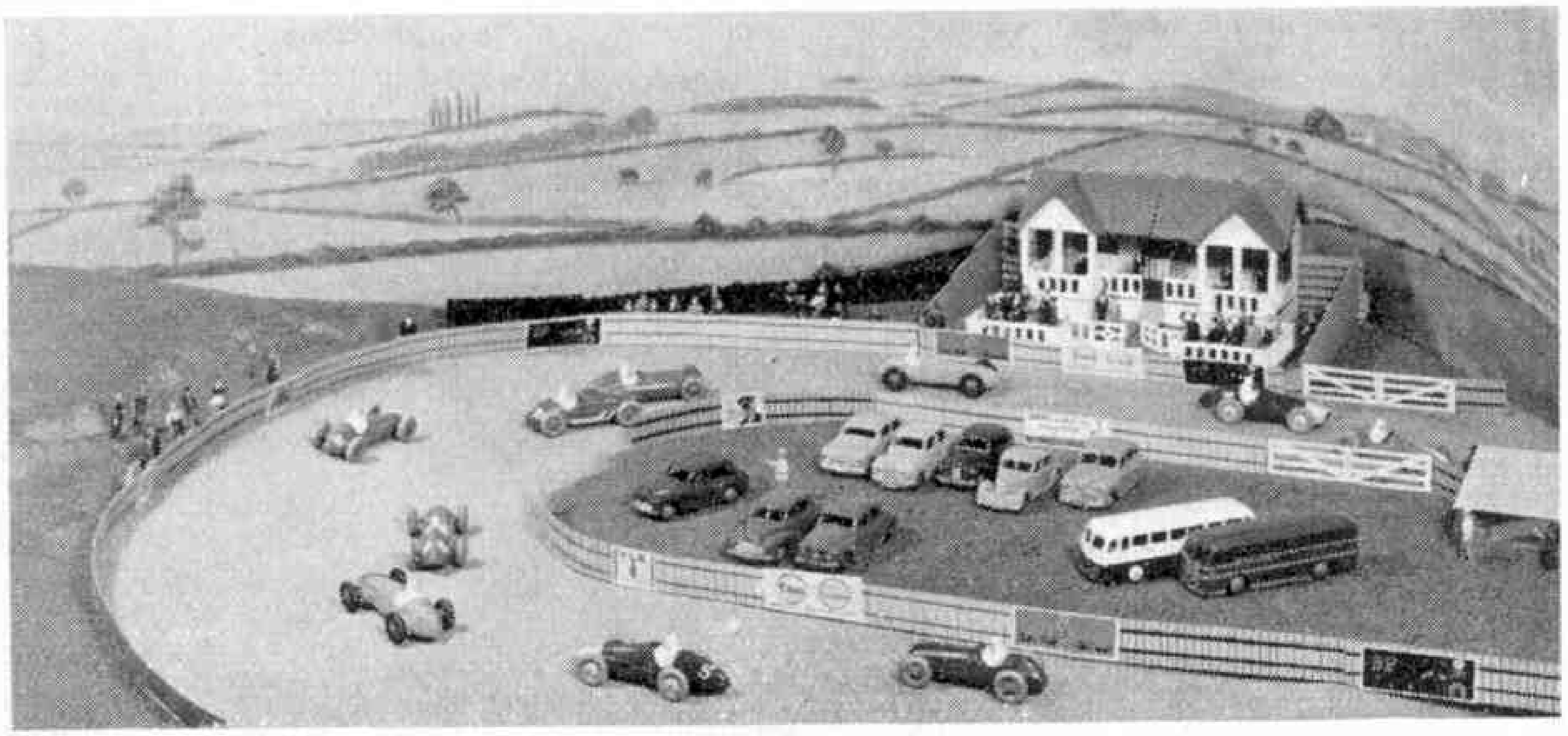
Continuing the special study that is being made of the possibilities with light diesel car units or omnibuses on rails, an A.C.V. three-car set weighing less than 40 tons has been tried on the Ayr–Dalmellington and Ayr–Kilmarnock routes. As previously mentioned when the scheme was announced, the train can be operated as a one-, two-, or three-car unit. The six-cylinder diesel engine is placed below floor level, providing maximum amount of space for passengers and luggage. Three cars seat 120 passengers. The maximum speed is 45 m.p.h. and the train staff consists of driver and guard only.

Glen 4–4–0s have been noted at Kittybrewster, a Shire 4–4–0 at Glasgow, Buchanan Street, and an A1 4–6–2 at Glasgow, St. Enoch. Peppercorn Pacifics have made frequent appearances at Glasgow, Central, on Crewe expresses, among other interesting locomotive interchanges between the former L.M.S. and L.N.E.R. routes. Great Eastern type B12 4–6–0s numbered 61508 and 61563 have been withdrawn.

During a recent lineside observation party arranged by the Stephenson Locomotive Society at Beattock on the famous gradient, expresses were specially stopped to convey the members and friends to and from Edinburgh or Glasgow. The first five Clan 4–6–2s were seen and the pioneer, *Clan Buchanan*, travelled behind giving a good return run, as well as A1 and Stanier Pacifics with rather a preponderance of class 5 4–6–0s. Timekeeping was for the most part excellent. Fairburn 2–6–4T and Caledonian 0–4–4T were engaged on banking duties.



The Portsmouth Special mentioned last month, organised by the Stephenson Locomotive Society, on the down journey with No. 32425 Trevose Head, one of the few remaining Brighton Atlantics. Photograph by B. C. Bending.



DINKY NEWS

Race Track Fun

By **THE TOYMAN**

BUILDING up and running a Dinky Toys layout is great fun, whether the layout is an elaborate one, with town halls, garages, churches, bus stations and houses, or the simpler type representing a racing circuit built up by the racing car enthusiast. The latter now has plenty of opportunity for running races on a miniature track, with so many famous racing cars represented in the Dinky Toys series, and others still to come. In fact he will have no difficulty in finding enough competitors for events on his track, whether the races are purely track events or are road races, like that at Le Mans, described on page 403 of this issue by the *M.M.* representative who went to Le Mans to see it.

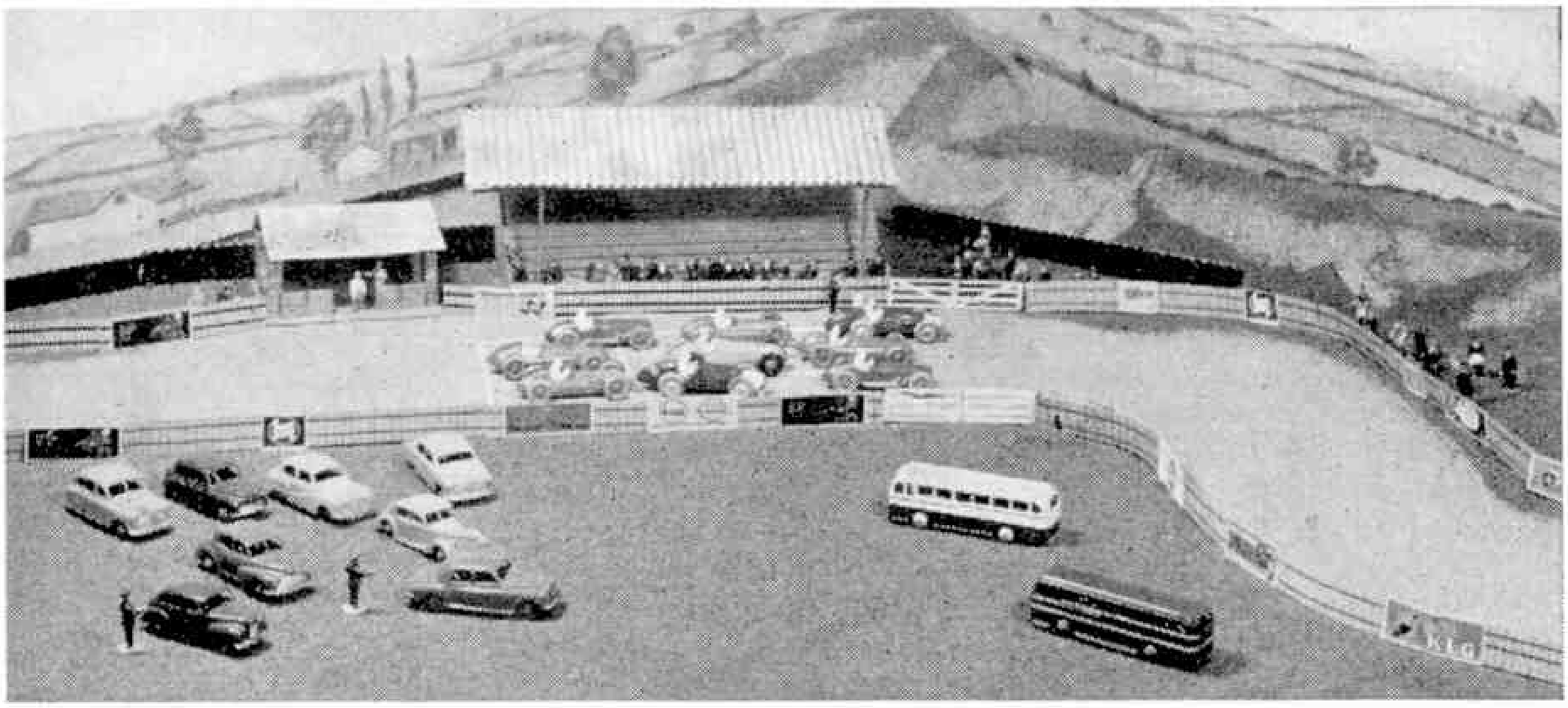
Incidentally our correspondent was able to cheer a wonderful British triumph, with Jaguars 1st, 2nd and 4th and yet another representative of this make 9th, the entire team of four Jaguars completing the course. Another great achievement was reaching the average of over 100 m.p.h. for the first time in the history of the race. The event will add real interest to the Jaguar coupe that will be included before long in the Dinky Toys series, and another interesting piece of news I can give you is that the Cunningham car that occupied third place at Le Mans also is a very likely addition. So keep a lookout for news of these, which as usual will be given in due course in the *M.M.*

Now let us go back to the immediate purpose of this article—how to build up a simple race track for use with Dinky Toys racing cars. Here are a few points that you will probably find useful. The palisades you can see in the pictures on these pages are strips of thin card that have been lined with black ink to represent planking. Figures to represent mechanics are easy to obtain. The pits for the cars taking part in races have been built of small wooden building bricks that happened to be at hand, but there are many materials that can be used with equally good effect.

Dinky Toys racers rounding the hairpin bend of a race track layout. Ferraris, Alfa-Romeos, Maseratis, H.W.M.s and Cooper-Bristols are all represented.

The spectators, even on this simple layout, are entitled to some approach to comfort, so a stand has been built up for them. This was made from a few Meccano parts, some thin card and a sheet or so of corrugated card. Its base is a rectangle built up of Angle Girders, at each corner of which there is a short Rod fitted vertically to support the piece of card that forms the roof. This last material is used also for the seating. A more ambitious stand built up of Bayko parts is shown in one of the illustrations.

More strips of corrugated card painted black provide the back of the enclosure near the stand, and the distant scene, beyond the layout, is suggested by a light grey painting of a typical countryside view. The plentiful use of miniature

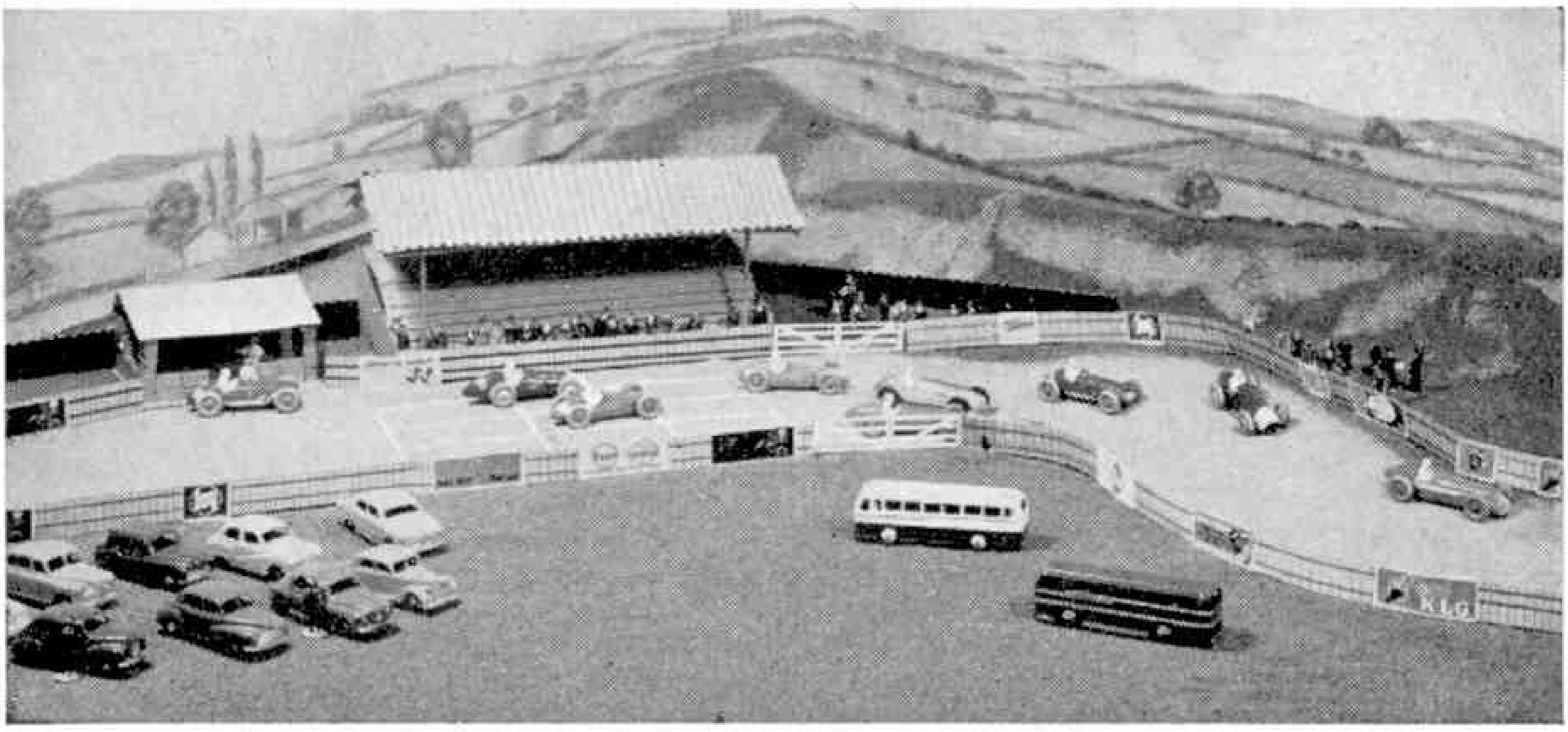


Hornby Posters improves the general look of the whole affair, and of course there are miniature figures on the stand and in places round the track behind the rails. The meeting is not as well attended as I should have liked, but there is a good array of entrants in the races.

After building up the layout, whether more elaborate than the one illustrated here or simpler, the next thing is to get the racing cars on to it, either just to present scenes such as those in the illustrations to this article, or to run actual races with them. Racing can be enjoyed in various unorthodox ways, as most Dinky Toys enthusiasts have discovered for themselves. Perhaps the simplest and in many ways most satisfactory plan is for events to be run off in heats of say two cars only, with two rival enthusiasts running the entries round by means of a short cane or stick. To do this well at speed calls for some dexterity, and of course rules have to be observed, one of the most important being that the wheels must definitely remain on the ground throughout the race. Any competitor who just hurls his car along to the finishing post instead of running it properly must be immediately disqualified!

The upper illustration on this page shows the start of a race on a Dinky Toys track layout, with two latecomers still backing their cars into position in the car park. The one below shows the scene at an early stage of the race; one competitor has already made a pit stop.

A car park of course is a necessity at race meetings, and one is provided here, with Dinky Toys cars and coaches in it. On this particular layout the approach to the car park in the foreground is actually across the racing track, not an ideal one perhaps, but one that might be necessary in certain instances. Those who plan much larger layouts than the one illustrated can of course arrange all these matters better.



Testing the Stratojet

By John W. R. Taylor

LONG before a modern aeroplane flies, its designers are able to predict its precise performance by calculation and wind tunnel tests. But the only way to *prove* that a bomber, for example, will fly the required distance with a specified bomb load is to go out and do it after the aircraft has been built.

Nor is it sufficient to make just one such flight. An aeroplane is of use only if it can go on doing its job day after day, continuously, in all weathers, with a minimum of maintenance. Once again, the only way to prove it will achieve this standard of reliability is to do it.

For that reason, many companies have since the war subjected their new aeroplanes to "accelerated test programmes," in which as much flying as possible is crammed into as short a period of time as possible, to see how the aircraft stand up to almost continuous flying. A description of what such a programme entails has been given by the American Boeing Company, who recently completed 1,000 hours of intensive flying with one of their B-47 Stratojet six-jet, sweptwing atom-bombers, during which it flew 432,066 miles, equal to about 17 times around the world.

In all 121 separate flights were made, half of them by night, during which the Stratojet cruised over 39 of America's 48 States. It was a perfectly standard B-47B production machine, straight off the big assembly line at Wichita, Kansas, and was flown for most of the 1,000 hours by 39-yr. old test pilot Ed. Bracher, whose log book already included 356 North Atlantic crossings and 92 Stratojet flights.

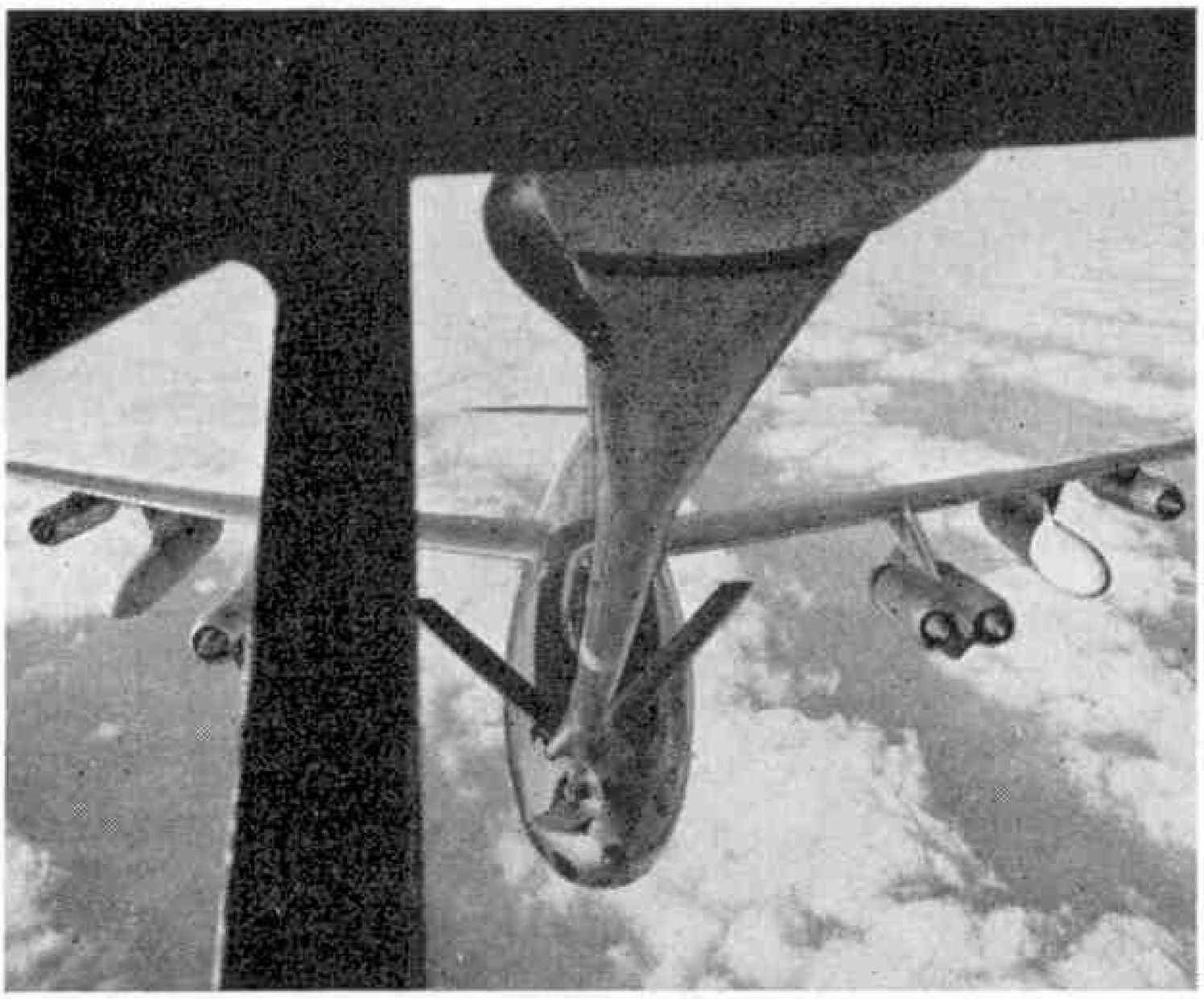
As the idea was to test the bomber's operational efficiency, everything was done to make the flights as similar as possible to real combat missions. Several times the B-47 was intercepted and "attacked" by jet fighters on patrol near important U.S. military targets, and on 92 of the flights it made proper bombing runs. On a dozen of them, clusters of eight real 1,000 lb. bombs were dropped from a height of eight miles over the Gulf of Mexico, on to the blue-water bombing range of Eglin Air Force Base, 50 miles off the coast of Florida. The rest were simulated bombings, during which the aircraft stayed in the air until it burned fuel equal in weight to a bomb load.

Much of the fuel burned in the programme was supplied in mid-air by KC-97 Stratofreighter tankers, which served as aerial filling stations. Using the Boeing "Flying Boom" system, 69 fuel transfers were made, half of them at night and all without incident. They helped the Stratojet to complete its 1,000 hours' flying in record time with an average of 8½ hours for each flight. Many lasted 12 and 13 hours, and the longest kept the 185,000 lb. bomber in the air 14 hours, 25 minutes.

The Stratojet's crew of three also

Perched on a pile of dummy bombs, the crew of the Boeing B-47 Stratojet which recently completed a 1,000-hour test programme have a chat before take-off. Photographs by courtesy of the Boeing Airplane Company, U.S.A.

"refuelled" in mid-air on the longer flights, with the help of an electric oven and a hot cup for warming soup, coffee or chocolate. Normal procedure was for the navigator to warm the food and pass it to the pilot and co-pilot. But on one occasion the oven went on strike, with the result that, after landing, the co-pilot complained "We crossed three mid-western States and were well into the fourth before the thing turned out a toasted cheese sandwich!"



High over Kansas, a Boeing B-47 Stratojet is refuelled from a Boeing KC-97 Stratofreighter tanker-transport.

Actually, this may not have taken as long as it appears, because the bomber achieved incredible speeds during some of its test flights, by cruising along "jet streams." On one occasion, whilst streaking eastward over Chicago, the pilot told the local air traffic controller that he expected to arrive over New York one hour and five minutes later. "You mean *two* hours, don't you?" asked the operator. But the pilot repeated his original E.T.A. (estimated time of arrival) and did, in fact, cover the 725-mile hop in 65 minutes, at an average ground speed of 669 m.p.h.

Even this performance was beaten during a flight from Albuquerque to Wichita when, as reported in last month's *Air News*, the Stratojet got in a jet stream at 40,000 ft. and averaged 794 m.p.h. for 30 minutes. This does not, of course, mean that it flew faster-than-sound, because the speed of the jet stream of wind, which can reach more than 300 m.p.h., must be deducted from the 794 m.p.h. ground speed to discover the aircraft's true airspeed. But it shows what a problem high-flying jet bombers can present to ground defences if they hitch a ride on a convenient jet stream *en route* to their target.

Another high-altitude phenomenon encountered by the bomber's crew was when the six jet engines started blowing smoke rings. The rings were actually circular vapour trails puffed out by the engines in air with a low moisture content—but quite a lot of people on the ground believed they were seeing genuine flying saucers at last! They did not realise that while they were watching the "saucers," the B-47's bomb-aimer was watching their town coming up to the cross-hairs of his one-ton radar bomb-sight, waiting to wipe them off the map with an imaginary atom-bomb!

Many of the results of the Stratojet's accelerated test programme are secret, but one item of news that has been released should calm the fears of those aerodynamists who believed its wing was not sturdy enough, because it is so long and thin that it can flex many feet at the tips during flight. On one particular occasion, the bomber flew into a thunderstorm, and its crew saw it strafed by lightning and felt it being buffeted by violent gusts. The flexible wings absorbed the shock and made possible a ride so smooth that the co-pilot Jim Goodell remarked "If I wasn't there I could never have believed it." So there seems little doubt that in the B-47 Stratojet the U.S.A.F. has a worthy successor to those other great Boeing bombers, the Fortress and Superfortress.

It is, of course, still at the beginning of its development, but Boeing have already built more than 400 Stratojets, including 10 B-47As and 400 B-47Bs. The B-47E, with more powerful engines, is now in production and two experimental versions are flying—the RB-47C with four 9,000 lb. thrust engines and the turbo-prop powered B-47D.

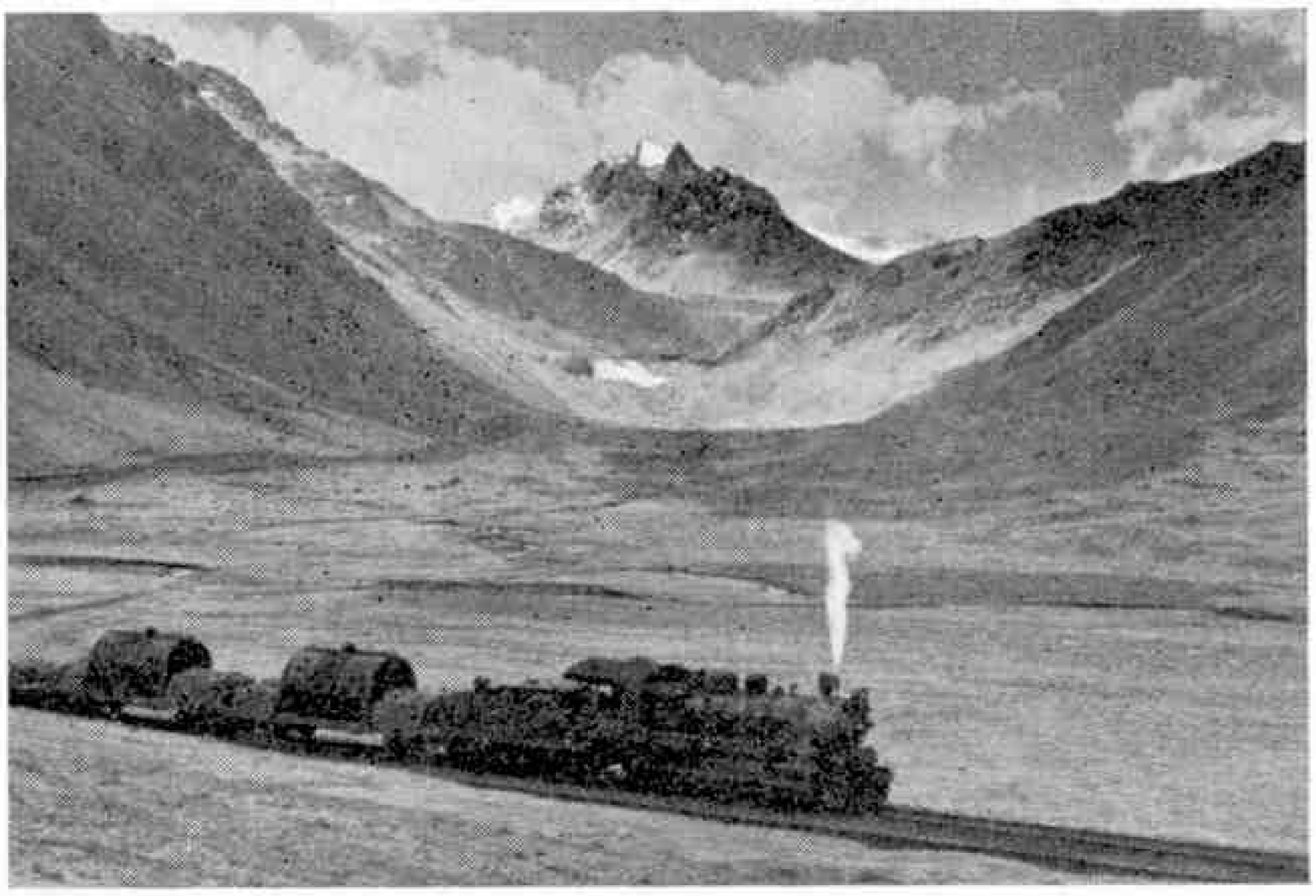
Across the Andes by Train

The World's Highest Standard-Gauge Railway

By W. H. Owens

ONE of the most thrilling train journeys you could imagine is to cross the mighty Andes mountains of South America by the Central Railway of Peru. For this is the only standard-gauge track in the world that reaches the quite amazing height of 15,806 feet above sea-level. Scenery on a most spectacular scale rewards the traveller along the greater part of this 200-mile railway, which links the Pacific seaport of Callao with the rich copper-mining districts high up in the lonely heart of the Andes.

Starting its run in the tropical heat of the Pacific coast, the train soon passes through the busy capital city of Lima before it begins the stiff 1 in 25 zig-zag climb to the Andes snow-line. To reach the summit of the range from Lima takes about 6½ hours, during which you must pass over 41 bridges and viaducts, through 61 tunnels and around 13 hairpin switchbacks.



A freight train seen against the majestic background of the Andes. Photographs illustrating this article are by H. D. Narvarte, Lima, Peru.

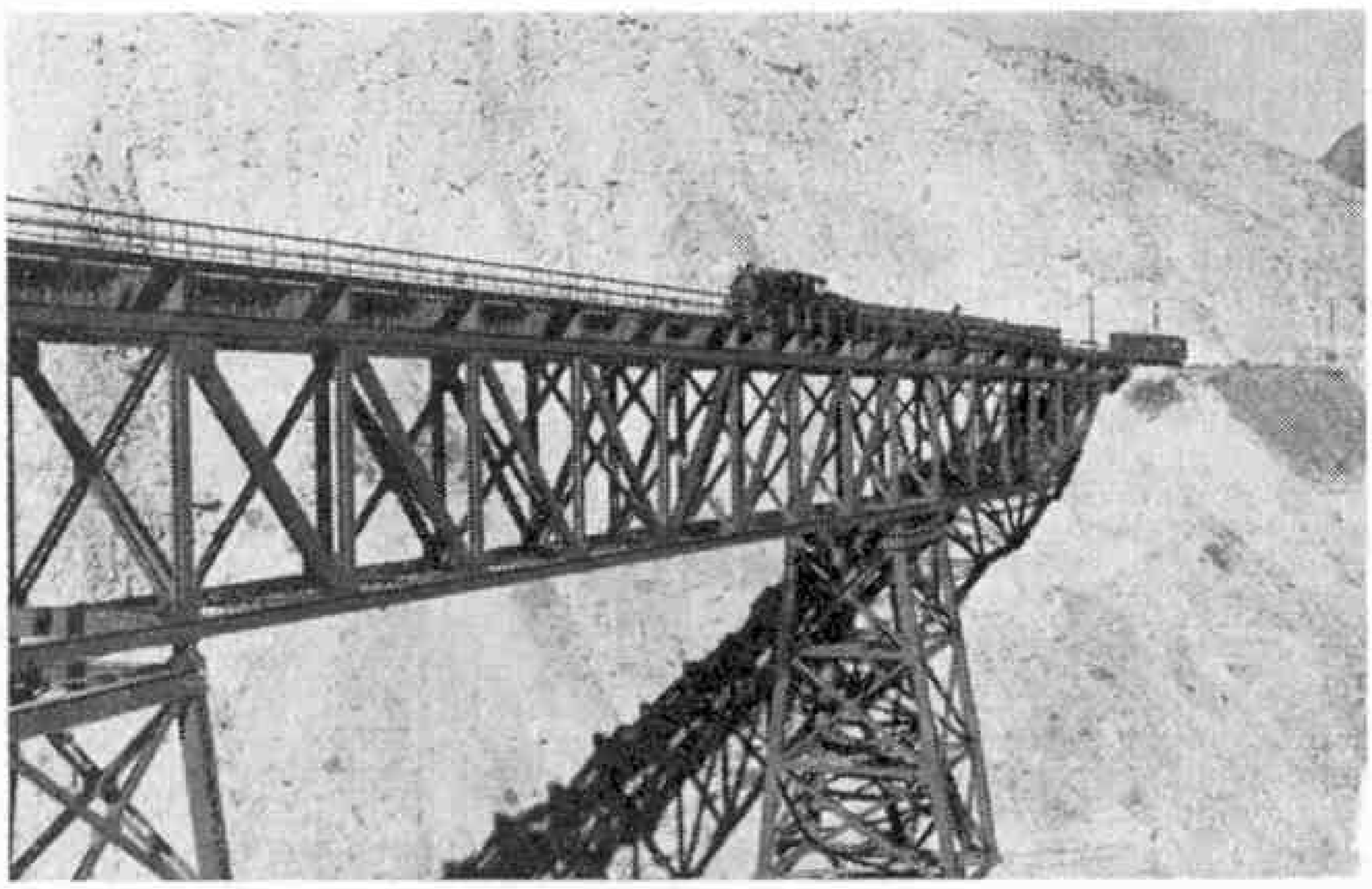
Twenty-six miles on from Lima is Chosica, a beautiful winter resort of Peru built on a 2,800-ft. plateau encircled by snow-capped peaks. Beyond there the landscapes change abruptly, the green open valley of the torrential river Rimac giving way to steepening walls of bare volcanic rock, which reflects a whole rainbow of colours in the dazzling sunlight. The scenery gets ever wilder and more exciting, and the temperature drops noticeably as the train chugs on, higher and higher, climbing at the rate of 40 feet a minute.

Rugged crags and snowy pinnacles of weird and fantastic shape crowd in on the winding railway track. Twisting and turning about, the train plunges suddenly in and out of rock tunnels and across latticed-steel bridges hanging over chasms at dizzy heights. One moment you may be zig-zagging on track that clings precariously to a narrow mountain ledge; at the next, crossing a deep canyon by an incredibly slender bridge hundreds of feet long.

Up there on the roof of the Andes, where the temperature, even in summer, drops at night to well below freezing-point, the train and its engine are dwarfed to toy-like proportions by the towering peaks and glaciers round about.

Yet this remarkable railway operates a regular daily service of up-to-date passenger and freight trains all the year round. The through trains between Lima and Huancayo, a market centre for thousands of Indians from the surrounding mountain villages, are drawn by powerful modern locomotives and equipped with buffet cars for the service of meals. From the outlying mining centres large quantities of copper, lead and silver ores go by the Central Peruvian Railway to the smelting town of Oroya, 12,000 feet up, and from there the metals go down to the coast at Callao for export to the world's markets.

Highest point on the main line is the Galera Tunnel, close to which are the sources of rivers that flow down east and west across the continent into the Atlantic and Pacific Oceans. This tunnel pierces



The Carrion Bridge, with a span of 717 ft., is named after the famous Peruvian doctor, Daniel A. Carrion, who sacrificed his life in an attempt to discover the cause of verruga fever. It is the third bridge erected on the site.

the main Andes range and the station nearby is at a height of 15,681 ft. Overshadowing the tunnel entrance is Mount Meiggs, over 17,500 feet, which is named after the builder of the Central Peruvian Railway.

Henry Meiggs, a young American engineer from New York, thought of the idea for a railway through the heart of Peru's mountain country after visiting what was then an almost inaccessible region about the middle of last century.

Meiggs' proposal to build a railway across some of the world's most difficult rock terrain was greeted, perhaps not surprisingly at that time, with scorn. At first nobody would listen to his plans. But the young engineer was convinced they were possible, so he went on persuading the authorities in Peru until, at last, they became not only interested but enthusiastic, and signed a contract for the work.

His idea was to divert a mountain river and lay down the railway track in its dry bed. That sounded simple enough, but the actual task of construction proved to be a very formidable one indeed, demanding immense labour forces and the finest engineering skill. Meiggs, however, was a born organiser as well as a first-rate engineer.

More than 8,000 men were employed through the early stages of construction, and accidents due to rock falls and landslides caused heavy loss of life. On the western side of the Andes, from Callao almost up to the Galera Tunnel, the track practically adjoins the river Rimac and its tributary streams. Descending the eastern slopes from Galera, the route of the line follows closely the Yauli and Mantaro rivers, the last a tributary of the Amazon.

The building of the Central Railway began in 1869 and, despite the enormous difficulties and many problems, the first 90 miles of track were in use only seven years later. Operations were then interrupted for a time owing to war breaking out between Peru and Chile. They were resumed in 1890, and within the next twenty years the whole of the track, with its 21 switchbacks, was completed from Callao to Huancayo.

No railway in the world is so difficult and costly to maintain, because long sections of track are at all times threatened by disaster in the shape of landslides, avalanches and river flooding. In spite of all these hazards, the railway has a fine record for safety and smooth, efficient running.

Galera Tunnel and Yard. The station has an altitude of 15,681 ft.

Photography at the Circus

By E. E. Steele

MOST towns have a visit at least once a year from one or other of the various travelling circuses, and this spectacular kind of entertainment is eagerly welcomed by all, not least by the enthusiastic photographer in search of thrilling pictures. Booking early is a wise precaution, and a seat near the ring is a great advantage, especially in a position facing the bandstand, as the performers take their bows with their backs to the band.

If you intend to take photographs inside the circus, write first to the manager, as usually there are notices there forbidding the use of cameras without permission.

The cannon out of which a man and a woman are fired.

This is readily given, however, subject to certain simple conditions, "Flash" must not be used of course!

Circus lighting varies considerably, but you must use the fastest pan. film, and an aperture of at least f/4, if using a shutter speed of around 1/30th sec., which is the usual speed for many of the simpler cameras. If you can support your camera on a single-leg support, or similar device, you can give short "Time" exposures, but a fast lens is a great advantage. Readers who develop their own negatives will also find it helpful to use a developer such as "Promicrol," which has the property of getting all possible speed out of the film, especially if development is carried out for a little longer than usual. With a fast lens and fast film, however, the need for this would not arise.

It is well to await those moments of arrested motion, when a performer is taking a bow, for example. It is useless to attempt to photograph animals wildly careering round the ring, as only blurred results would occur. Focusing needs to be particularly accurate when using a fast lens at full aperture, as there is much less depth of focus.

Jumbo takes a bow. The illustrations to this article are from photographs by the author.

If you have a simple camera with a lens obviously too slow for this kind of work, you can still make interesting pictures of the Circus Parade, which takes place from the station to the chosen site, often through the principal street of the town. All you have to do is take up a position on the edge of the pavement, and snap the parade in passing. There are usually beautiful horses with gaily dressed attendants, various animals and clowns, with the ever popular elephants bringing up the rear. The time of the parade is advertised in the local Press.

A further opportunity for outside photography will be found in the Circus Menagerie, where most of the performing animals, with the addition of monkeys and other attractions, can be viewed on payment of a small fee.

The circus arrives—with lots of elephants!

Our Oldest Competitor —

Meccano International Model-Building Competition

By "Spanner"

Judging Now Completed
Prize Lists Next Month

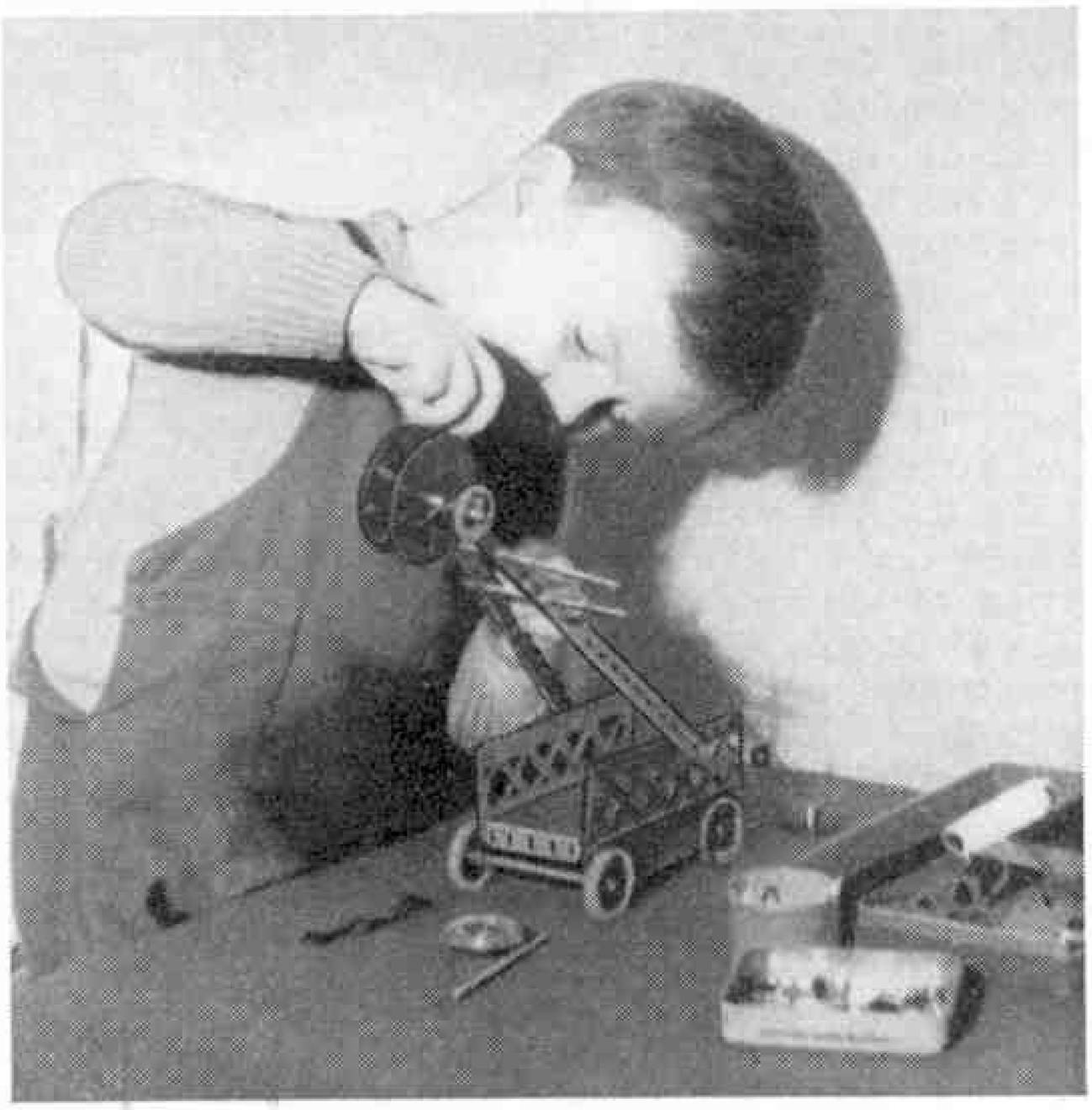
BY the time you read this every one of hundreds of prize-winners in the greatest-ever Meccano Model-Building Competition will have received a letter notifying him of his success and containing the appropriate Cheque or Postal Order. These letters were sent out some weeks ago, and the full list of awards in each Section of the Contest will appear in the Magazine next month. During the coming months I shall illustrate, and where possible describe, some of the most outstanding and attractive prize-winning models, and I can assure readers that there are a great many really magnificent and original models from which I shall be able to make my selections.

I have had a most interesting time during the last few weeks examining the huge stacks of entries, and I have been much impressed by the very fine work that some competitors have done. When I look back and compare the present Contest with the last great competition of this kind, which was held in 1932, two things are very noticeable. One is the very much higher standard of work shown in the entries generally in the present Competition, and the other is the marked difference in the type of subjects chosen by the successful competitors. In the earlier contest most of the principal prizes were awarded for models such as cranes, ships and vehicles; but in the present Contest some of the larger prizes were earned by models of industrial machines and road-making equipment, and there was much more originality in the entries generally.

I was also amazed to see the very wide range covered by the ages of the competitors, and I cannot illustrate this point better than by referring the reader to the two portraits reproduced on this page. The upper one shows the oldest competitor from whom an entry was received. He is Sr. Ing. V. M. Quesada, of Lima, Peru, who is 82 years of age. The lower illustration shows the youngest competitor, Master L. J. Ockleford, Friern Barnet. He is only 2 years and 9 months of age, but already he is a keen model-builder. I think that these illustrations prove the claim that Meccano is the finest hobby in the world for "boys" of all ages.

Sr. Ing. Victor Quesada, Lima, Peru, seen at the head of the page, is an active model-builder who has reached the age of 82. The youngest competitor, Master L. J. Ockleford, Friern Barnet, London N.11, was only 2 years and 9 months old on the closing date of the contest. Below he is seen at work on one of his models.

— and our Youngest.



Master Richard Green, who lives at Kew, Victoria, Australia, was a prize-winner in a Meccano Competition.

Among the Model-Builders

By "Spanner"

Building with Creeper Track

My correspondence with model-builders produces queries of all kinds connected with the Meccano hobby, and of course I welcome the opportunity to help enthusiasts whenever I can. One of the most frequent questions I am asked is "How can I make realistic creeper track?" It is evident that many model-builders would welcome suggestions on this point.

I find that the easiest way to represent creeper track for small models is to use Meccano Sprocket Chain passed round Sprockets. The width of a single length of Chain makes it suitable for only the smallest models, but by using two Chains side by side a wider track can be formed for use in larger models. This arrangement is very simple and gives excellent results.

In very large models, however, some form of built-up track is needed. I have already described several ways in which a realistic track can be made, and this month I am including yet another example of a creeper track made from standard parts. The arrangement is reproduced in Fig. 1.

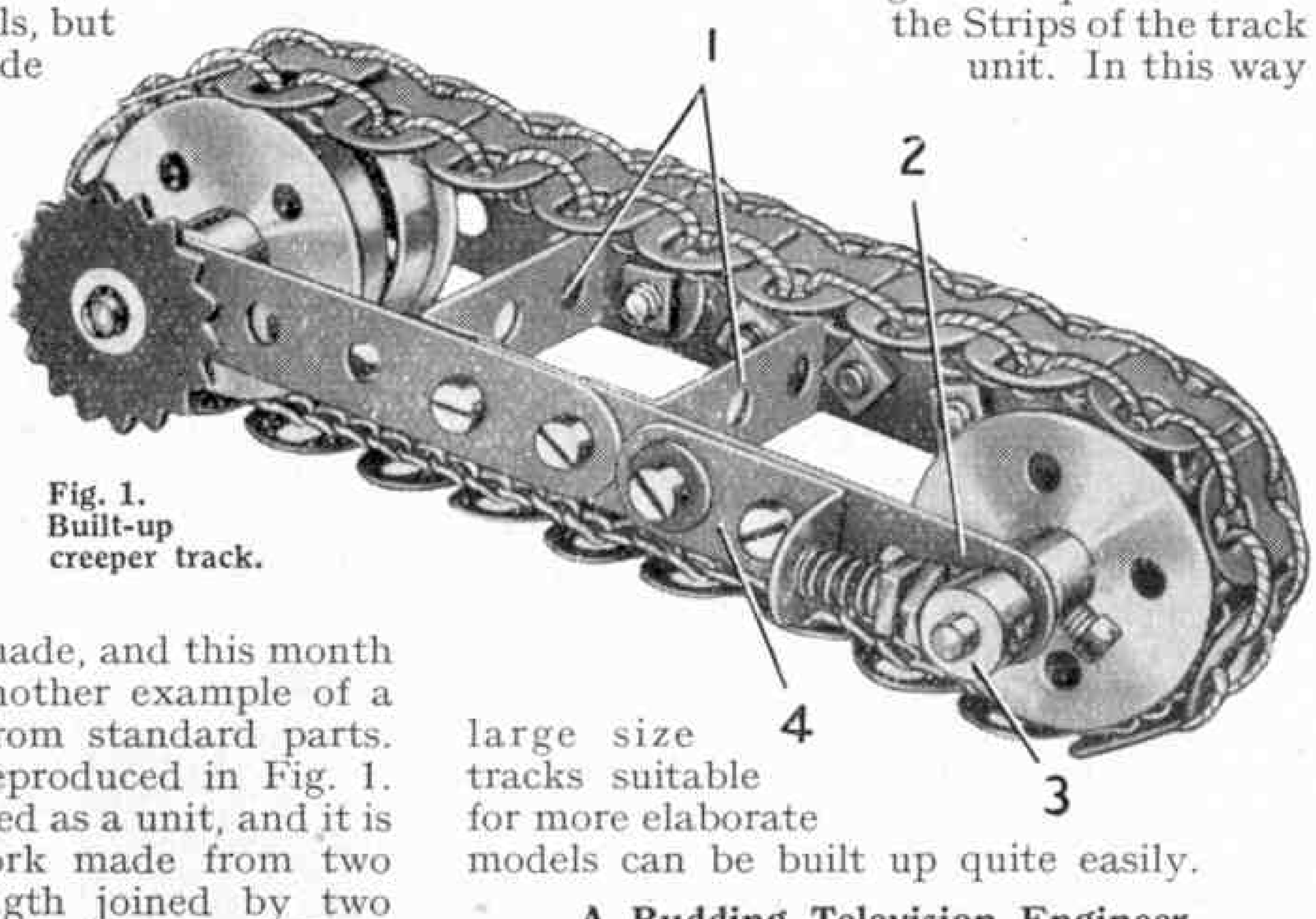


Fig. 1. Built-up creeper track.

The track is assembled as a unit, and it is carried on a framework made from two Strips of suitable length joined by two $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips 1. Each Strip is extended at one end by a 2" Slotted Strip 2.

The track passes round a pair of $1\frac{1}{8}''$ Flanged Wheels at each end of the unit, and the Wheels are fixed on 2" Rods. One of these Rods is supported in the end holes of the main Strips, and it is fitted with a Sprocket that is used to transmit the drive to the track from the power unit. The other 2" Rod is passed through the elongated holes of the Slotted Strips, and it carries a Collar 3 at each end. A Threaded Pin is screwed into each Collar, and is fixed in place by a nut, but it does not grip the 2" Rod. A Compression Spring is slipped over the Threaded Pin, which is then passed through a $1'' \times \frac{1}{2}''$ Angle Bracket 4 bolted to the Slotted Strip.

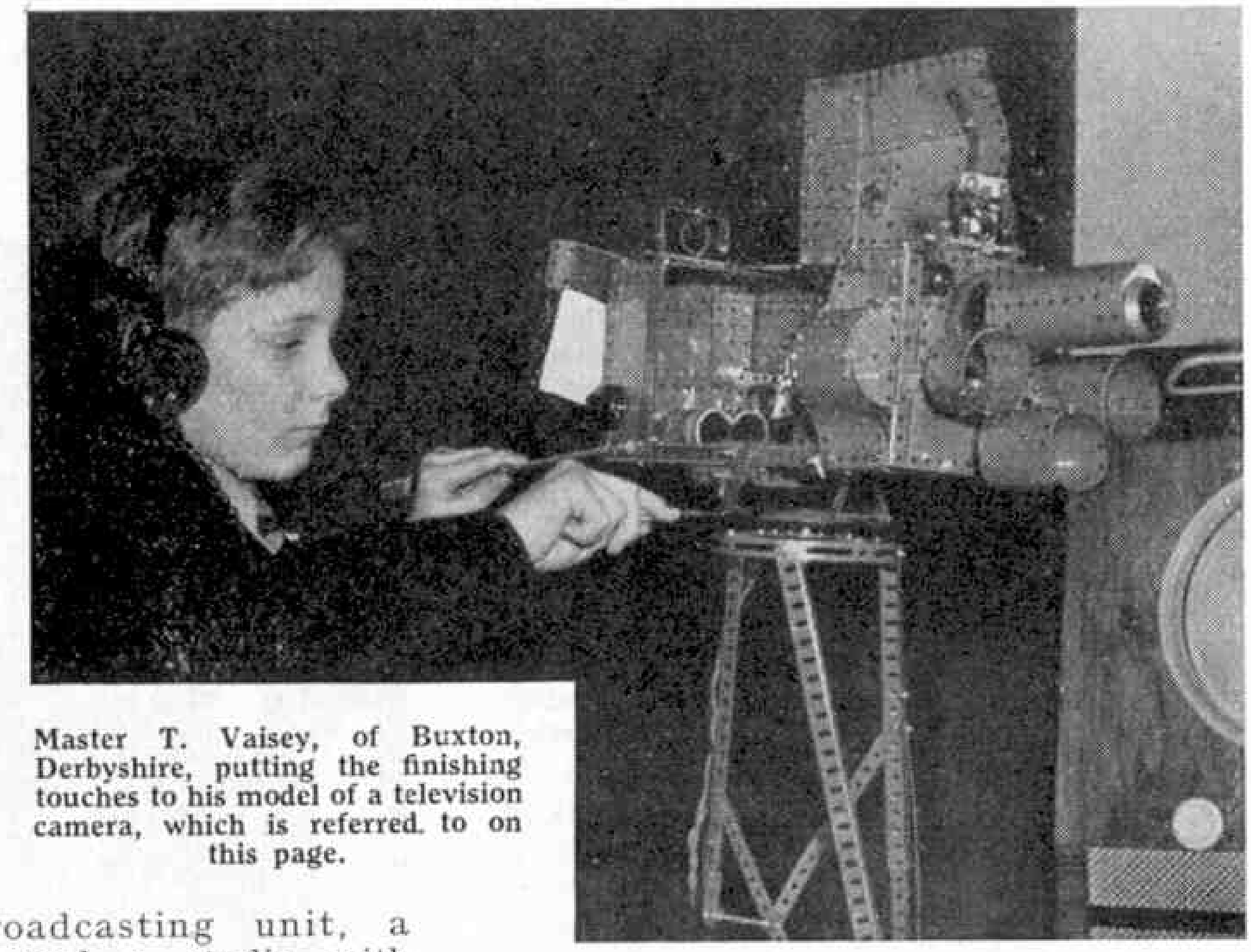
The track illustrated is made from a number of Fishplates attached to two endless lengths of Sprocket Chain. The Fishplates are connected to each Chain by a length of Cord, which is passed through a hole in one of the Fishplates and round one of the links in the Chain. The Cord is then passed again through the hole in the Fishplate, and is threaded in a similar way through further Fishplates until the required length of track is assembled. The ends of the Cord are then tied together.

The width of the track can be increased by using $1\frac{1}{2}''$ or $2\frac{1}{2}''$ Strips instead of Fishplates, and by fitting larger Double Angle Strips between the Strips of the track unit. In this way large size tracks suitable for more elaborate models can be built up quite easily.

A Budding Television Engineer

Trevor Vaisey, Buxton, has used his fine collection of Meccano parts to build a most realistic model of a television camera. He is seen in one of the accompanying illustrations putting the final touches to his model, and although he is only 13 years of age he already has a good knowledge of television apparatus and a flair for mechanics that should be of considerable help to him in attaining his ambition.

He based his model on a photograph of an actual camera and its features include a red cue-lamp at the front, a talk-back microphone to enable the cameramen to talk with the producer, lens view finder and panning handle. The model stands about 4 ft. high on a tripod fitted with wheels.



Master T. Vaisey, of Buxton, Derbyshire, putting the finishing touches to his model of a television camera, which is referred to on this page.

In addition to the camera, Trevor has built a fine model of a T.V. van complete with outside broadcasting unit, a microphone boom and a studio with miniature cameras and lights. I hope that this enthusiastic model-builder will be successful in achieving his ambition to take up a career in television, and I wish him the best of luck.

Automatic Friction Brake for Winding Drums

The mechanism illustrated in Fig. 2 automatically applies a brake to the winding drum of a crane as soon as the drive to the drum is disengaged. The shaft 1 is free to slide about $\frac{1}{4}$" in its bearings, and its movement is controlled by a foot-pedal 2. The pedal is formed by a Crank fitted with an Angle Bracket, and it is carried on a Rod mounted in a $1\frac{1}{2}$" × $\frac{1}{2}$" Double Angle Strip bolted to the base of the housing. A Coupling 3 is fixed on the Rod, and a $\frac{3}{8}$" Bolt held in the Coupling engages between Collars on Rod 1.

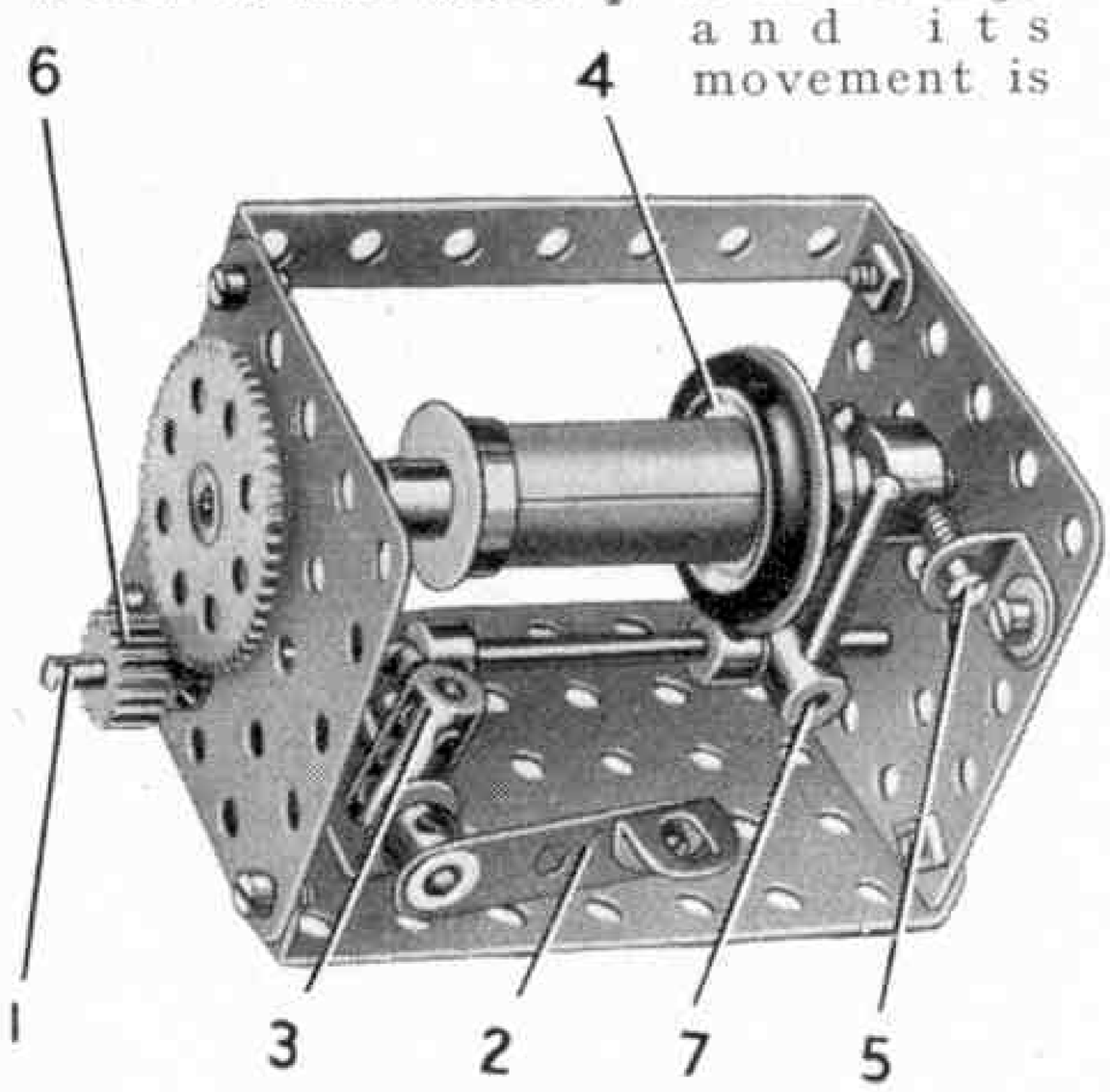


Fig. 2. An automatic friction brake for winding drums.

The winding drum is made from a Sleeve Piece fitted at one end with a $\frac{3}{4}$" Flanged Wheel, and at the other end with a Chimney Adaptor, and the boss of a 1" Pulley 4 is accommodated inside the Chimney Adaptor. The 1" Pulley and the $\frac{3}{4}$" Flanged Wheel are fixed on the winding drum shaft. The shaft is fitted also with a Bush Wheel held in a Socket Coupling, but this assembly is loosely mounted and is pressed against a Rubber Ring on Pulley 4 by a Compression Spring placed between the Socket Coupling and the side of the housing. The Socket Coupling is prevented from turning by a $\frac{3}{8}$" Bolt 5. This is fixed in an Angle Bracket and its shank engages the slot of the Socket Coupling.

A $\frac{1}{2}$" Pinion 6 is fixed on Rod 1 so that it is just clear of a 57-tooth Gear on the winding drum shaft. A Coupling 7 is loosely held between Collars on Rod 1, and two $1\frac{1}{2}$" Rods fixed in the Coupling engage the groove of the Socket Coupling. When the pedal 2 is depressed, the $\frac{1}{2}$" Pinion 6 is moved into mesh with its Gear, and at the same time the Coupling is withdrawn.

Meccano Automatic Ticket Machine

An Attractive Model with Intriguing Mechanism

SOME time ago I received details of an ingenious automatic ticket machine built by Mr. B. D. Rivron, Ipswich. Although the actual ticket issuing mechanism is somewhat similar to arrangements that have been used in previous Meccano models of this type, Mr. Rivron's machine is fitted with several interesting safety devices that he has designed himself, and I am describing these in detail as I feel sure many model-builders will find them useful and possibly will be able to adapt them for use in other models. They include a three-stage coin slide, which ensures that the coins reach the operating mechanism at a uniform speed. This prevents the trip lever from being worked by a single coin forced quickly through the slide so that its momentum upsets the balance of the lever. A special feature of the slide is a section that automatically rejects coins smaller than those for which the machine is intended.

Mr. Rivron's machine is operated by a pre-war Meccano Clockwork Motor that

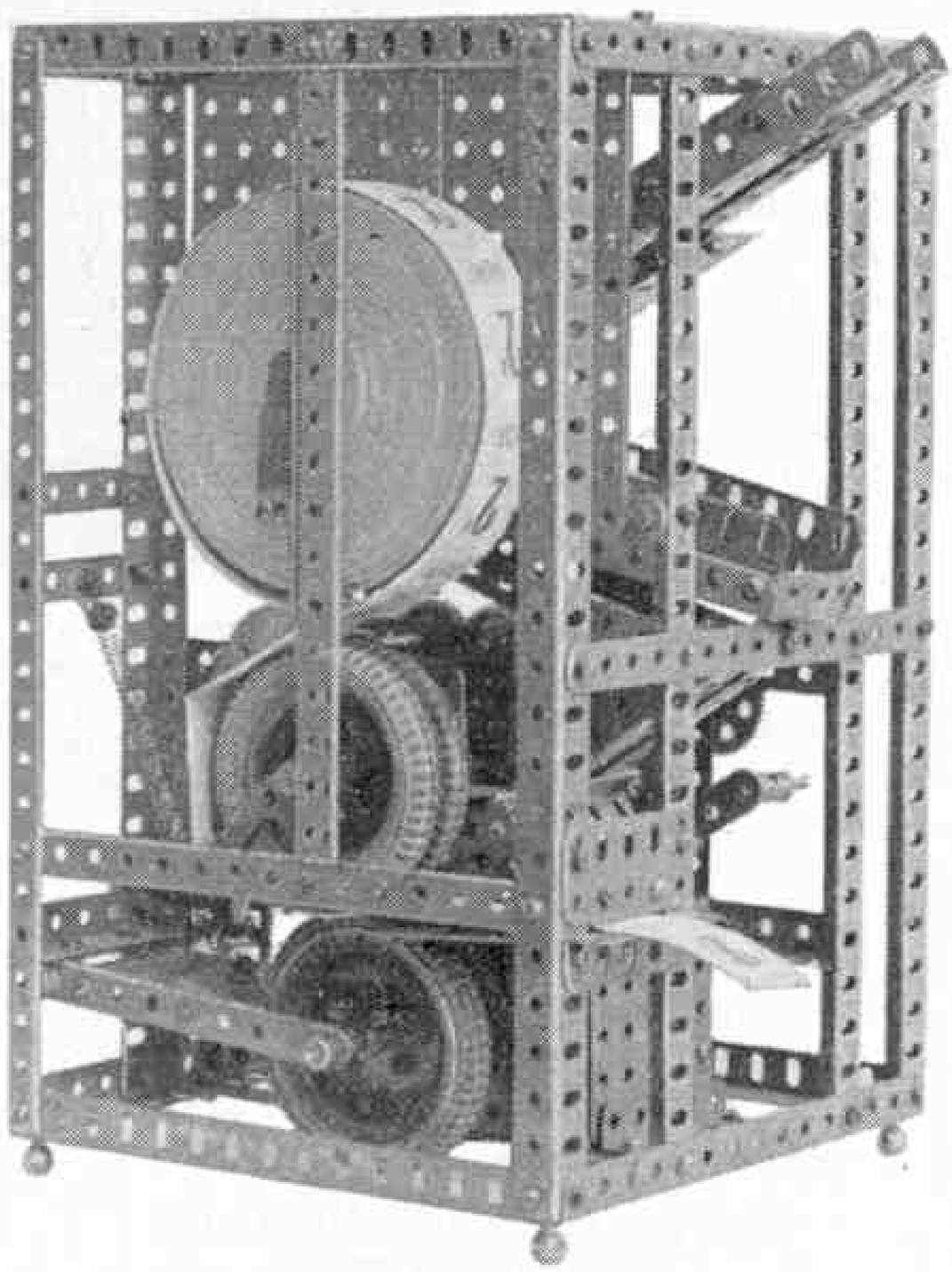


Fig. 1. An automatic ticket machine that has several attractive features. It was made by Mr. B. Rivron, Ipswich.

is no longer available and the gearing is designed to suit that Motor. A detailed description of the actual ticket mechanism therefore would be of little help, as it would have to be altered considerably for use in a model powered by the current No. 1 Clockwork Motor. A brief description of the trip mechanism, however, will be useful to model-builders who have not previously built machines of this kind and would like to do so.

The coins are inserted in a slide that ends opposite to a cup 1 (Fig. 2), which is made from three 1½″ Angle Girders backed by a 1½″ Flat Girder. This cup is attached to a Coupling fixed on a Rod 2 that is freely mounted in its bearings. The Coupling is fitted with a short Rod that carries a Worm 3. The position of the Worm on the Rod is adjusted so that the weight of two pennies in the cup is just sufficient to tilt it against the balancing effect of the Worm.

The Rod 2 is fitted with a Crank, which carries a Threaded Boss that bears against a 1″ Triangular Plate bolted to a 2″ Strip.

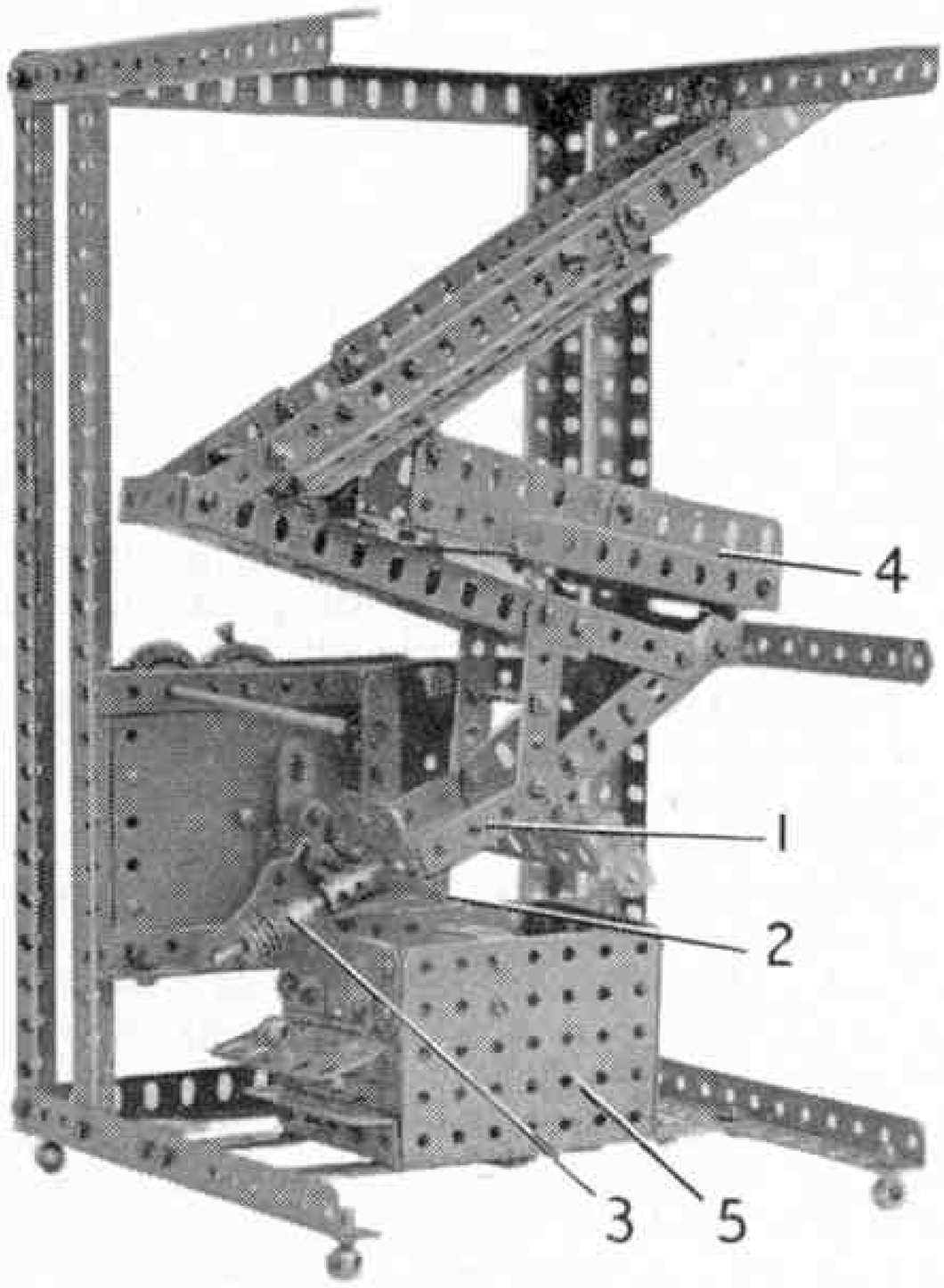


Fig. 2. The three-stage coin slot, cup and collecting box of the ticket machine.

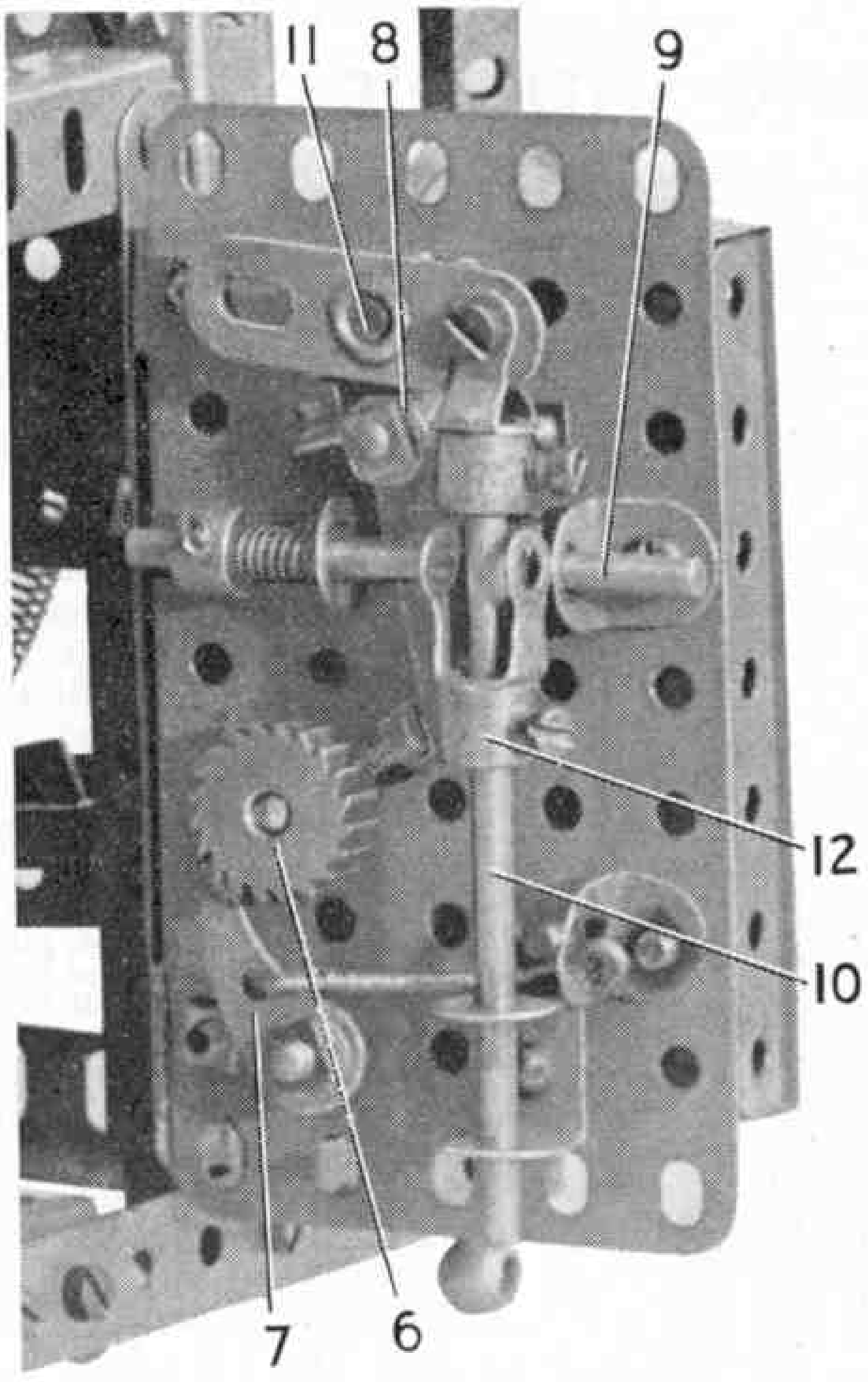


Fig. 3. The door to the coin box, showing details of the lock mechanism.

The 2″ Strip is used to extend one arm of a Bell Crank. An Angle Bracket is bolted to the end of the other arm of the Bell Crank, and this Angle Bracket normally engages a Bolt in a Collar on a Rod that is driven at a suitable speed by the Motor. When the cup tilts under the weight of the coins the Angle Bracket is raised clear of the Bolt, however, and the shaft carrying the Collar is permitted to make one revolution. This shaft is connected by gearing to two sets of 2″ Pulleys fitted with Tyres. The end of the roll of tickets passes between the Pulleys, and the gear drive is arranged so that each cycle of the drive to the Pulleys is sufficient to eject one ticket.

The three-stage coin slot is an interesting feature of Mr. Rivron's machine, and one that many model-builders overlook in planning "penny-in-the-slot" devices. Obviously if a direct coin slide is used light-weight coins could be forced down the slide with sufficient force to operate the mechanism. The three-stage slide ensures that the coin reaches the mechanism with a force that can be predetermined by setting the angles of the slides. The slide arrangement is shown fairly clearly in the illustrations, but a special feature that is not immediately apparent is the automatic rejection device for small coins.

The slide consists mainly of Angle Girders connected together by Screwed Rods. Most of the Girders are arranged with their flanges facing inward, and the coins slide on the flanges. At one section of the first stage of the slide, however, two Angle Girders are introduced with their flanges pointing outward, and a Flat Girder is fixed by its slotted holes to each flange. The adjustment permitted by the slotted holes is used to arrange the Flat Girders so that a small lip projects inside each Angle Girder. This lip is sufficient to support a penny, but a smaller coin falls through into a special rejection slide marked 4.

The coins from the cup 1 fall into a container 5, which can be removed through a door provided in the framework. Actually this door is a very attractive part of the machine, as it is fitted with a special lock that can be released only if the correct sequence of unlocking operations is known. The lock mechanism is shown clearly in Fig. 3.

The lock is operated by two wheels, 13 and 14 (Fig. 4), one of which is fixed on the same Rod as a Ratchet Wheel 6, which is permitted to (Continued on page 432)

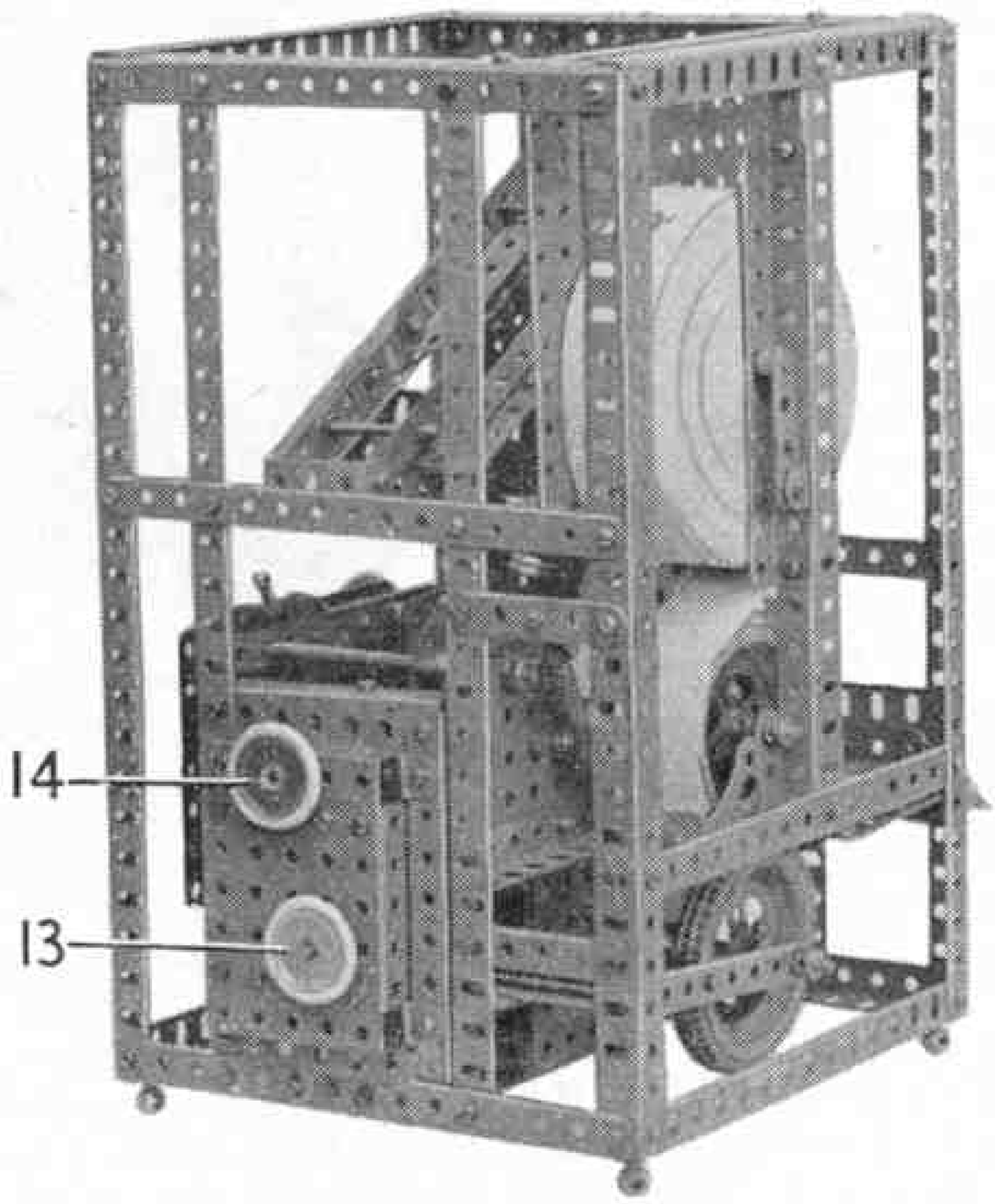


Fig. 4. The ticket machine seen from the back.

New Meccano Models

Vertical Steam Engine—Momentum Tractor

A VERTICAL Steam Engine that can be built from parts in a Meccano Outfit No. 1 and a novel Tractor, which is driven by the energy released by a heavy revolving flywheel, make two attractive subjects for our new models this month.

The Steam Engine is seen in Fig. 1 and its base is a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate. The cylinder supports on each side are two $5\frac{1}{2}''$ Strips connected at their upper ends by a $2\frac{1}{2}''$ Strip 1. The cylinder is made from two $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates rolled into tubes and then connected together by two Fishplates placed inside the cylinder. A Bush Wheel 2 is attached to an Angle Bracket bolted to the top of the cylinder.

The cylinder is fixed to the Strips 1, and one of the bolts 3 holding it in place also secures a Trunnion placed with its pointed end at the centre of the cylinder. A $\frac{1}{2}''$ Reversed Angle Bracket 4 is bolted to the Trunnion.

The crankshaft is made up from two 2″ Rods, each mounted in a Flat Trunnion bolted to the base. A 1″ Pulley 5 is fixed on the inner end of each Rod, and Angle Brackets are bolted to the bosses of these Pulleys. A bolt fitted with a nut is passed through the round hole of each Angle Bracket, and is screwed into the boss of the Pulley. The nut is then tightened to fix the Angle Bracket firmly in place.

A $\frac{3}{8}''$ Bolt is passed through one of the Angle Brackets and is fixed by a nut. A $2\frac{1}{2}''$ Strip 7 is then slipped over the Bolt, which is held in the second Angle Bracket by two nuts, leaving the Strip 7 quite free to pivot. Two Angle Brackets 8 are joined together by a $\frac{3}{8}''$ Bolt and a nut, and the Bolt is then passed through the upper hole of Strip 7 and is fitted with lock-nuts. The piston rod is a $3\frac{1}{2}''$ Rod free to slide in the Reversed Angle Bracket 4 and the Trunnion. It is held in the Angle Brackets 8 by two Spring Clips.

The Steam Engine is set in motion by turning a Crank Handle 9. This is mounted in two $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips joined at their upper ends by a $2\frac{1}{2}''$ Strip. A 1″ Pulley 10 on the Crank Handle is connected by a Cord belt to a similar Pulley on the crankshaft.

Parts required to build Vertical Steam Engine: 4 of No. 2; 4 of No. 5; 2 of No. 10; 5 of No. 12; 1 of No. 16; 2 of No. 17; 1 of No. 19s; 4 of No. 22; 1 of No. 24; 4 of No. 35; 24 of No. 37; 6 of No. 37a; 2 of No. 38; 1 of No. 40; 2 of No. 48a; 1 of No. 52; 2 of No. 111c; 1 of No. 125; 1 of No. 126; 2 of No. 126a; 1 of No. 142c; 2 of No. 189.

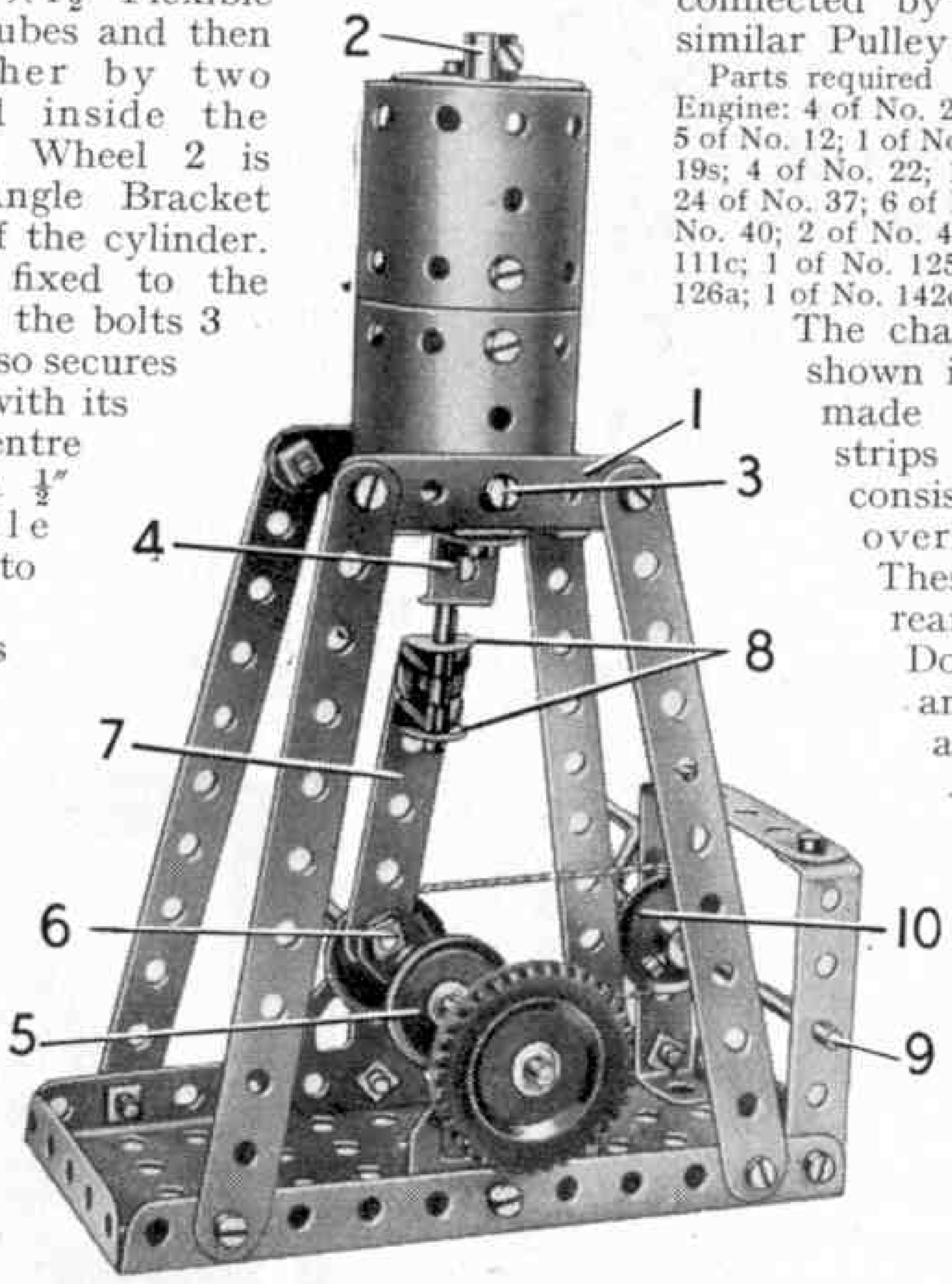


Fig. 1. This vertical Steam Engine is a fine subject for owners of Outfit No. 1.

The chassis of the Tractor shown in Figs. 2 and 3 is made from two built-up strips 1, each of which consists of two $5\frac{1}{2}''$ Strips overlapped nine holes. These are joined at the rear by a $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 2, and at the front they are connected by Angle Brackets to a Trunnion 3.

Each side of the bonnet is made from three vertical $2\frac{1}{2}''$ Strips joined at their upper ends by a $3\frac{1}{2}''$ Strip 4. The side is filled in by a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate. A $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip is bolted to each end between the Strips 4, and the top of the bonnet is attached to Angle Brackets fixed to these Double Angle Strips. The top is made from two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates overlapped, and it is attached at the front by a $\frac{3}{8}''$ Bolt fitted with Washers to represent the radiator cap. The radiator is a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate. It is curved slightly and is bolted to the Double Angle Strip between the front ends of Strips 4. Three Washers are placed on the Bolt.

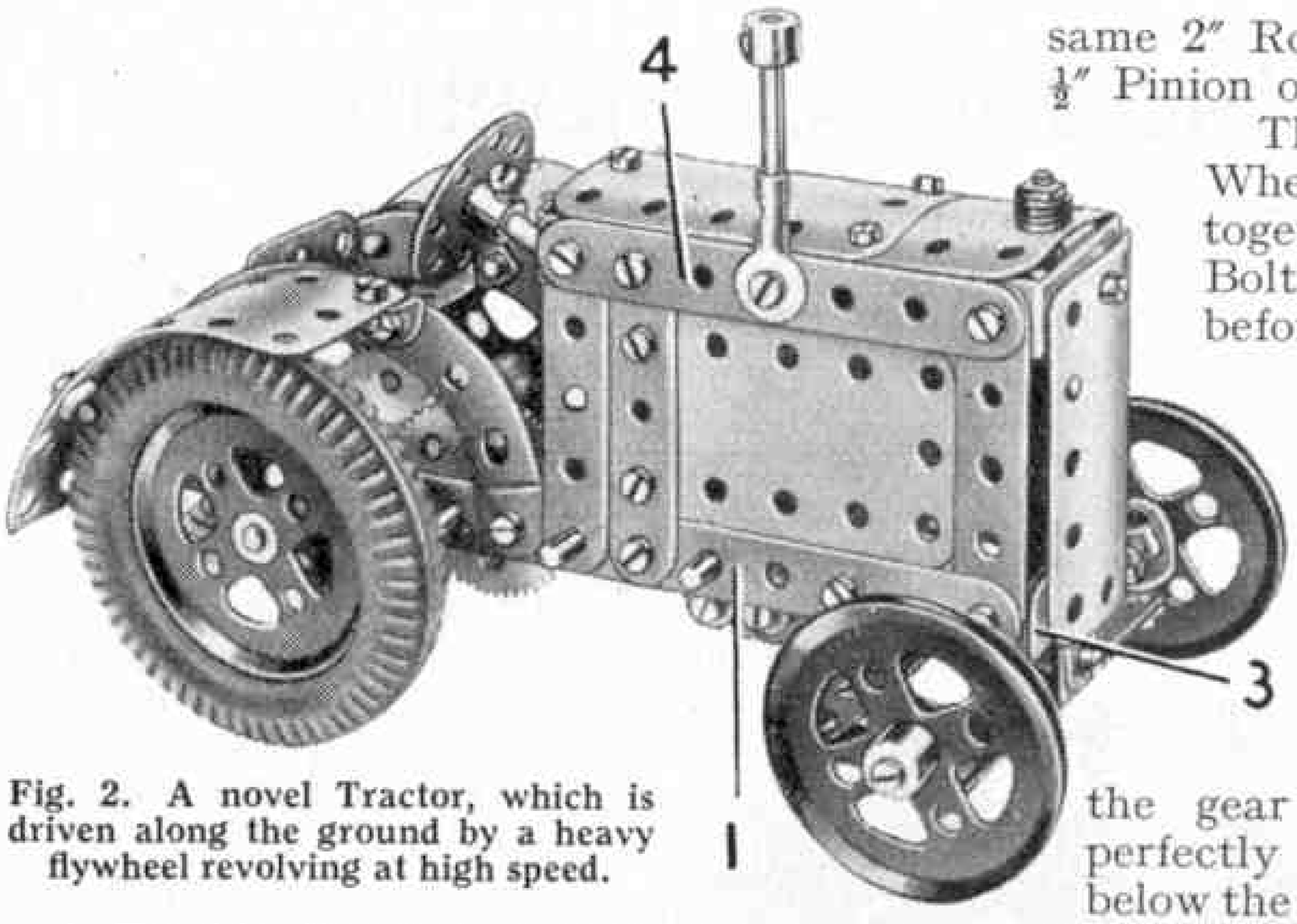


Fig. 2. A novel Tractor, which is driven along the ground by a heavy flywheel revolving at high speed.

A Double Bracket is bolted tightly to the Trunnion at the front of the chassis, and a second Double Bracket 5, fitted with a $3\frac{1}{2}''$ Strip 6, is connected to the first by a $1\frac{1}{8}''$ Bolt. The $3\frac{1}{2}''$ Strip forms the front axle, and the $1\frac{1}{8}''$ Bolt is fitted with lock-nuts so that the assembly can pivot freely.

Each of the front wheels is free to turn on a $\frac{3}{4}''$ Bolt held by two nuts in the slotted hole of an Angle Bracket. A $\frac{3}{8}''$ Bolt is passed through the round hole, and a nut is used to fix a $1\frac{1}{2}''$ Strip 7 tightly to the Angle Bracket. The $\frac{3}{8}''$ Bolt is then passed through one of the end holes of Strip 6 and is fitted with lock-nuts. A 3" Strip 8 is lock-nutted to the ends of Strips 7, and two $\frac{1}{2}''$ Bolts 9 are held in the Strip by nuts. The steering column is a 5" Rod and it is mounted in a Fishplate bolted to the Double Angle Strip at the inner ends of Strips 4, and in the centre hole of Trunnion 3. The Rod does not pass completely through the hole in the Trunnion, but its rounded end enters the hole and locates the Rod. A Collar placed against the Fishplate holds the Rod in position, and a second Collar is fitted with a $\frac{3}{4}''$ Bolt that engages between the Bolts 9 in Strip 8.

The rear axle is a $3\frac{1}{2}''$ Rod and it carries a 57-tooth Gear that meshes with a $\frac{1}{2}''$ Pinion on a 2" Rod 10. The latter is fitted also with a 57-tooth Gear engaging a $\frac{1}{2}''$ Pinion 11, and a third 57-tooth Gear on the same 2" Rod as Pinion 11 meshes with a $\frac{1}{2}''$ Pinion on the flywheel shaft.

The flywheel is made from four Wheel Discs and a Bush Wheel held together by $\frac{3}{4}''$ Bolts. Each of these Bolts is fitted with six Washers before it is passed through the flywheel and then five Washers are added before the nut is tightened. Collars are used to locate the Rods carrying the Gears, and Washers are inserted where necessary to space the Gears accurately. It is very important to make sure that the gear train and the flywheel are perfectly free-running. A cover plate below the gearing is made from a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate curved at one end and bolted to a $1'' \times \frac{1}{2}''$ Angle Bracket 12 and to an Angle Bracket 13 attached to a Fishplate.

The wheel casing and mudguard for each of the rear wheels is made from two $2\frac{1}{2}''$ stepped Curved Strips. These are bolted direct to the chassis at the front, and they are connected at the rear to Fishplates used to lengthen the strips 1. Each mudguard is made from two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates attached to Angle Brackets bolted to the Curved Strips. The driver's seat is a Trunnion fixed to a $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip bolted between the Curved Strips.

Parts required to build the Momentum Tractor: 4 of No. 2; 3 of No. 3; 1 of No. 4; 6 of No. 5; 2 of No. 6a; 4 of No. 10; 2 of No. 11; 11 of No. 12; 1 of No. 12b; 1 of No. 15; 1 of No. 16; 3 of No. 17; 1 of No. 18a; 4 of No. 20a; 2 of No. 24; 4 of No. 24a; 3 of No. 26; 3 of No. 27a; 53 of No. 37; 26 of No. 37a; 107 of No. 38; 4 of No. 48; 5 of No. 59; 4 of No. 90a; 11 of No. 111; 2 of No. 111a; 4 of No. 111c; 1 of No. 111d; 2 of No. 126; 2 of No. 142a; 9 of No. 188; 1 of No. 189; 1 of No. 212.

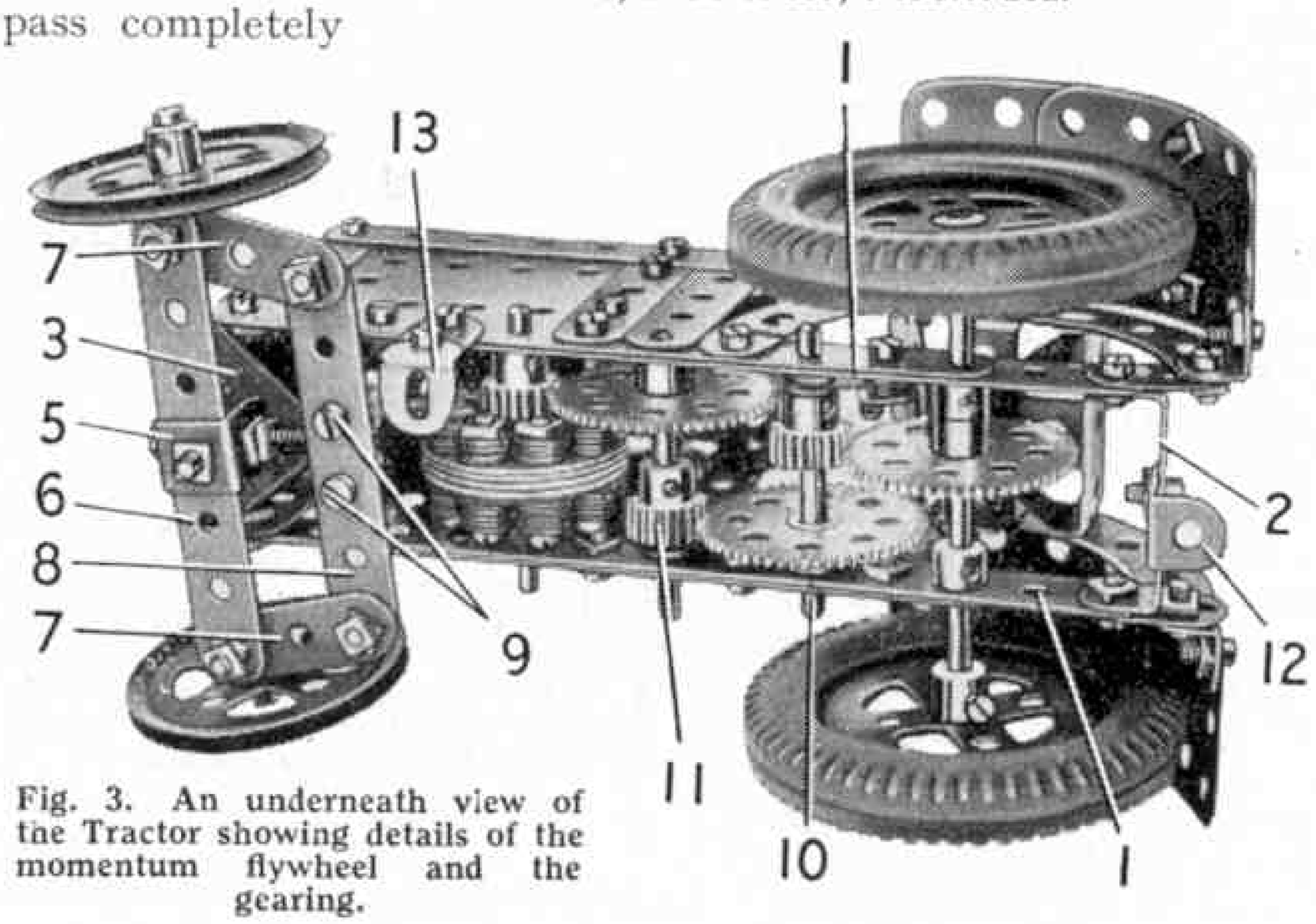
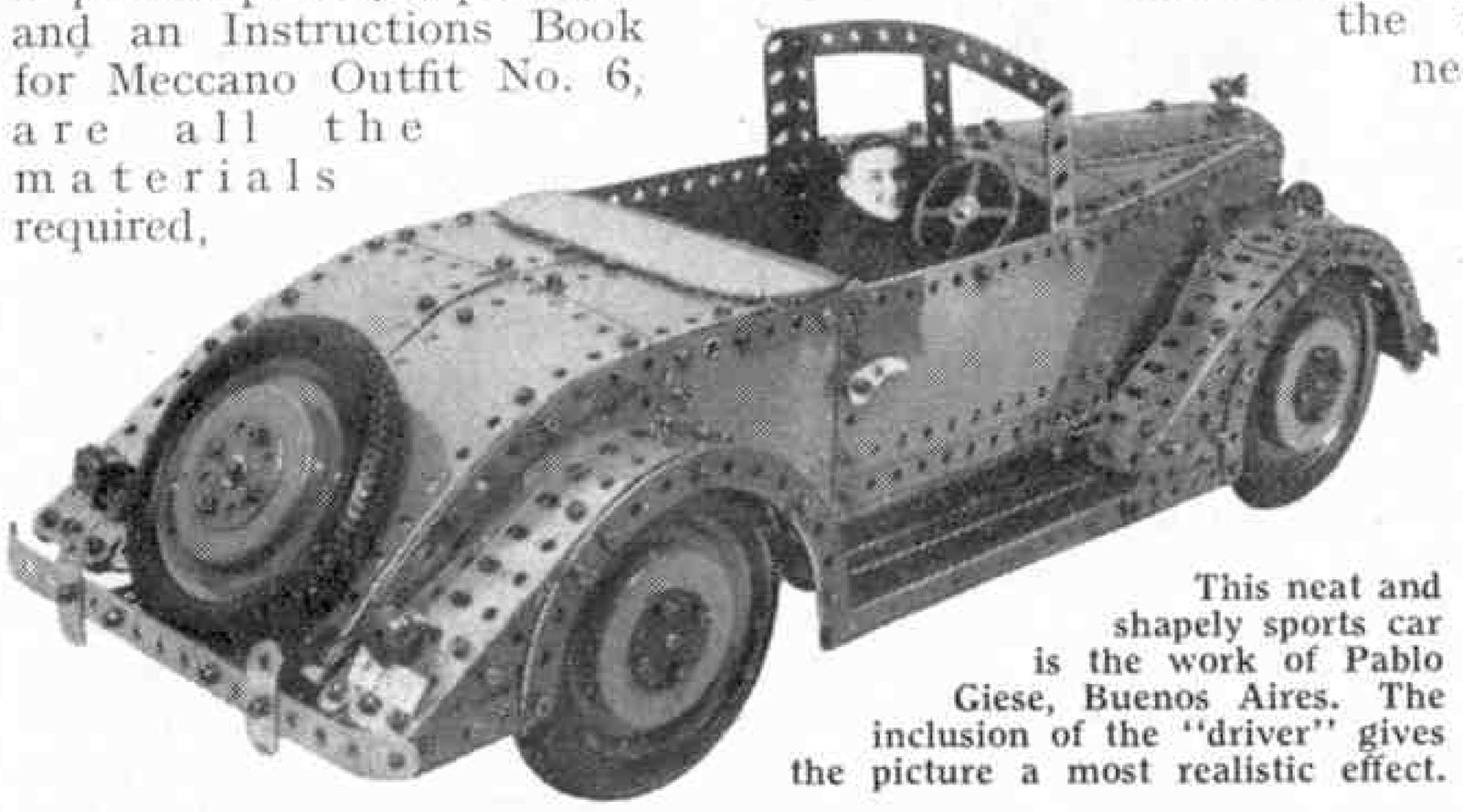


Fig. 3. An underneath view of the Tractor showing details of the momentum flywheel and the gearing.

"Find the Model" Competition

A Summer Contest for Meccano Enthusiasts

THIS month we introduce a new type of Meccano Competition that we think will be popular with all model-builders. As there is no model-building to be done, and there are no sketches or photographs to prepare, entries can be prepared quite easily either indoors or out in the garden. A pen or pencil, a postcard and an Instructions Book for Meccano Outfit No. 6, are all the materials required, and fine cash prizes are waiting for the successful competitors.



This neat and shapely sports car is the work of Pablo Giese, Buenos Aires. The inclusion of the "driver" gives the picture a most realistic effect.

Every reader will be familiar with crossword puzzles and this special Meccano Competition is based on somewhat similar lines. In the panel on this page appears a list of twenty phrases, each of which is a clue to the name of a Meccano model shown in the Instructions Book for Meccano Outfit No. 6. For example, the first clue, *"It is not a skull banger in spite of its name,"* obviously refers to something connected with a blow on the head, and a search through the Instructions Book will soon reveal that the title *"Hammerhead Crane"* aptly fits the clue. Some of the clues will lead very easily to the models concerned, but others are rather more subtle and a little patience and ingenuity will be required to solve them correctly.

A competitor should go through his Instructions Book carefully, and make a note of the models whose names in his opinion most aptly fit the clues. When he has completed the list, he should write on a postcard the name of each model and the number of the clue, as given on this page. *One model name only may be given for each clue.* Alternatives are not permitted.

The name of the model only is required; the model number is not necessary. It should be noted that the models are not necessarily chosen only from the Outfit No. 6 section of the Instructions Book. Some of the models whose names are referred to in the clues may appear among those built from Outfits Nos. 1 to 5.

This Competition is open to readers of all ages living in any part of the world, and the prizes to be awarded for the best solutions are as follows: First, Cheque for £3/3/–. Second, Cheque for £2/2/–. Third, Cheque for £1/1/–. There will be also 20 prizes, each of a Postal Order for 10/–.

Entries should be written on postcards only, which should be addressed *"Find the Model Contest, Meccano Ltd., Binns Road, Liverpool 13."* Each competitor must write his name and address, and his age, clearly on his entry. The closing date for receipt of entries is 31st October, 1953.

"FIND THE MODEL" COMPETITION

Each of the following phrases is a clue to the name of a model in the Meccano Instructions Book for Outfit No. 6. Can you identify the models?

1. It is not a skull banger in spite of its name.
2. Be sure it isn't before your cross.
3. In a spin.
4. We don't think this would have tricked the Trojans?
5. The R.A.F.
6. This is not a new parlour game.
7. Not a redskin, and it bites more than dust.
8. Unlike the saying, these are in the right order.
9. Perfect without practice.
10. Definitely no room on top.
11. But first bring it home.
12. Easy? Yes, bottom could use it.
13. For two or three or maybe more.
14. An iron camel?
15. Sounds like a razor.
16. No need for fuel shortage with this around.
17. Always on top of its job.
18. Usually more picturesque than useful, these days.
19. Roomy transporter.
20. This one keeps its feet dry.

Club and Branch News

WITH THE SECRETARY

CLIMAX TO THE SUMMER PROGRAMME

Given reasonably good weather the Summer Sessions are mainly of an open-air character, with the emphasis on Cycling Runs, Rambles, Excursions to places of interest, and outdoor Sports and Games. It is an excellent thing to arrange a good climax, and what could be more fitting than a special outing planned on a larger scale than most of those held during the summer months, or a sports meeting? A very good alternative to these two suggestions is a garden fête, if a suitable place for it is available.

Each of these "Grand Finales" has the merit of providing an opportunity for relatives and friends of members to be invited, so that they can learn something of what the Club or Branch is doing. Appreciation is the first step to actual support, and the good that can ensue from this can be far-reaching and of lasting benefit to the organisation.

BRANCH RECENTLY INCORPORATED

No. 545—Hastings (New Zealand) Branch—Mr. A. F. W. Mison, 205 Tamatea Street, Hastings, New Zealand.

CLUB NOTES

Exeter M.C.—Fine models of Buckingham Palace, a gold digging machine, suspension bridge and a water wheel have been completed, and one member is constructing a model of Stephenson's locomotive *Rocket*. A Coronation outing to Paignton was greatly enjoyed, some of the members visiting the zoo there and others spending the time on the beach. Club roll: 20. *Secretary:* R. Hawkins, 15 College Road, Exeter.

Mile End (Portsmouth) M.C.—The Club continues to make good progress. The Leader, Mr. P. Leggatt, constructed a fine model of the Coronation Coach. A working transporter bridge has been built by one member, who demonstrated its operation. The Club has been visited by a local Councillor, who gave an interesting talk. Outdoor activities have included a visit to the site of the new Clarence Pier, where members were greatly interested in the pile driver at work. They were able to inspect the machine and make rough drawings for guidance in constructing models of it. Club roll: 48. *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.

Strensall (York) M.C.—Several new members have been enrolled. Model-building meetings are well attended, and the monthly Points Contests are producing excellent results. Club funds are being built up by means of occasional Whist Drives, the latest of which made a profit of £13 2s. 6d. The County Borough Road Surveyor and a R.A.F. Flight Sergeant have visited the Club and given interesting lectures. Members are looking forward to a coach trip to Liverpool this Session to visit the Meccano Works and the Mersey Tunnel. Club roll: 23. *Secretary:* M. Kendall, 4 Mafeking Villas, Station Road, Strensall, York.

Belgrave Union (Leicester) M.C.—Hornby Gauge 0 Nights continue to be very popular, with a 3- or 4-track layout laid round the Club room. A Model Railway Competition took the form of a deliberately prepared disaster, and competitors were given 20 min. to examine the mishap and determine its cause. Afterward a full inquiry was held. A visit to Nottingham Ice Stadium was greatly enjoyed. Meccano models recently completed have included a splendid one of a fairground, with traction engine and power unit. Club roll: 39. *Secretary:* C. S. Smith, 18 Doncaster Road, Leicester.

AUSTRALIA

West Wollongong M.C.—The annual Club Party and models display was very successful. A Table Tennis Tournament has been held. Many magazines have been added to the Club library. Two recent model-building competitions created keen rivalry between the Nuts and Bolts Sections. Many members are now interested in radio, and a series of lectures on this subject is being arranged. New members between 10 and 13 years of age will be welcomed. Club roll: 7. *Secretary:* J. Pagett, Corner Eastern and Byrarong Avenues, Wollongong, Australia.

BRANCH NEWS

Hindhead and District—A new and smaller "00" layout has been designed, and the construction of station buildings, scenery, etc., for it has been keeping members busy. *Secretary:* B. J. Hinde, "Hindhead Brae," Hindhead, Surrey.

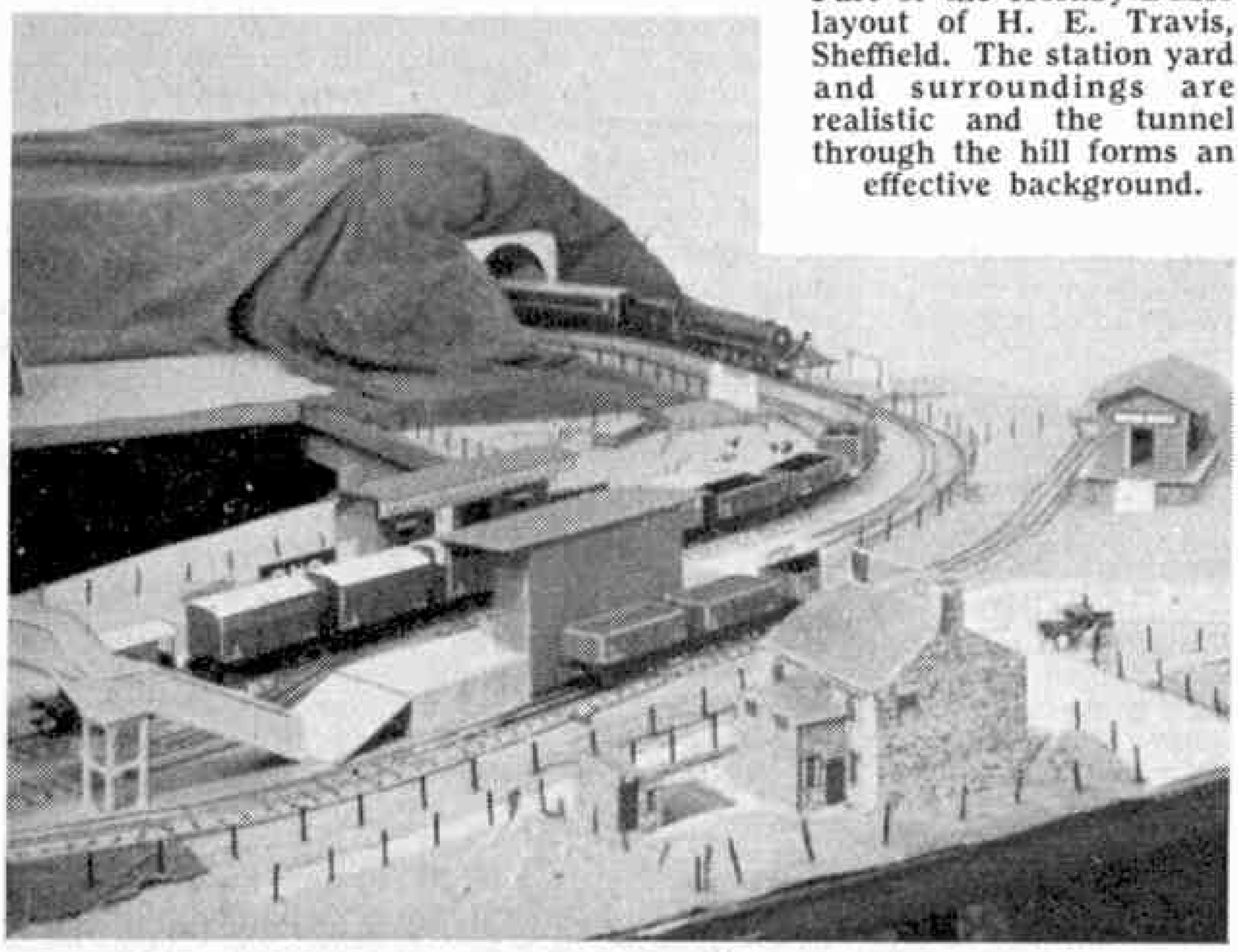
Officials and members of the Christchurch (New Zealand) M.C. Mr. E. Saunders, President, is at the extreme right of the centre row, with Mr. W. T. Gordon, Leader, third from the left in that row. Next to him, on his right, is W. A. Cheeseman, the energetic Secretary/Treasurer. The main activity of this enthusiastic Club is Meccano model-building, and some of the excellent models constructed by members for a recent competition are shown in the foreground of this photograph.

HORNBY RAILWAY COMPANY

By the Secretary

End-to-End Layouts

I SUPPOSE that most Hornby-Dublo layouts are of the continuous kind or at least incorporate a continuous main line, because most owners like to carry out long through runs. But it must not be thought that a non-continuous layout is uninteresting. On the contrary, it is actually the most realistic form of miniature railway because, like a real main line, it runs from one terminus to another.



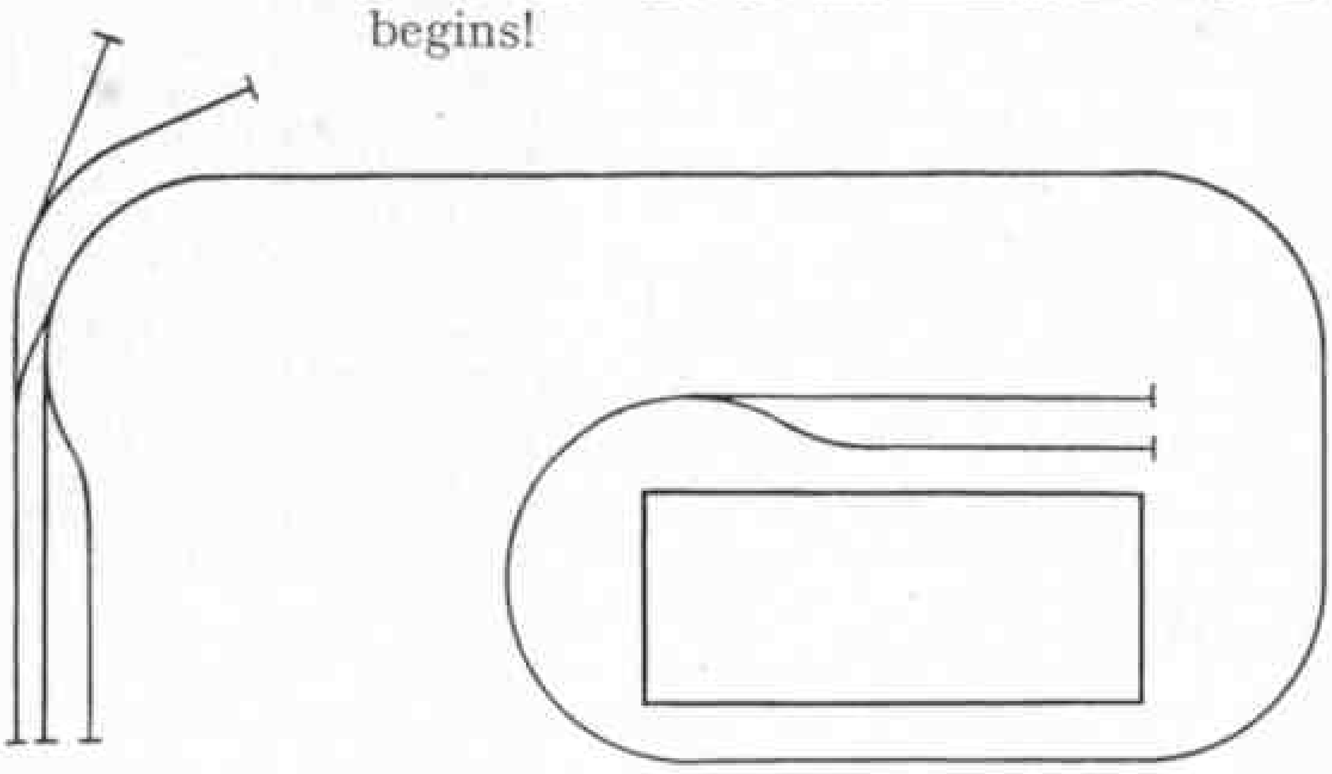
Part of the Hornby-Dublo layout of H. E. Travis, Sheffield. The station yard and surroundings are realistic and the tunnel through the hill forms an effective background.

On a layout of this kind the terminal arrangements have to be planned with care so that if possible the engines of arriving trains are not held up at the buffer stops until the trains they have brought in are taken away. This means the provision of crossover Points near the inner end of the terminal platform. In addition, a further set of crossover Points is necessary between the two main tracks at least one full train length out of the platform. This allows engines to run round their trains and makes it possible for empty stock to be shunted across from one road to the other as necessary.

In order to carry out completely the routine of train arrival and the running round of the engine, an Uncoupling Rail should be placed so that, as mentioned last month, the couplings between the engine and the first coach are just beyond the uncoupling ramp when the train comes to rest. When the ramp is set, the engine pushes back slightly, the couplings part and the engine can be moved forward toward the Buffer Stops. Then the crossover Points are operated and the engine can move away either round its train ready for the next journey out, or to the engine siding, according to the working programme.

The layout shown in the illustrations on this page is a non-continuous one. This has been developed by *M.M.* reader Harold Travis of Sheffield and the general idea of the system is shown in diagram form. This diagram merely shows the scheme, not the individual tracks. The railway is laid down with an operating space by the inner terminus. At the outer terminus there are extensions from the station to the engine shed and yard.

The line boasts of a fairly long tunnel, and cuttings, and you will notice, too, that all the tracks are correctly fenced in. All too often on layouts it is very difficult to determine where the railway ends and the rest of the miniature world begins!

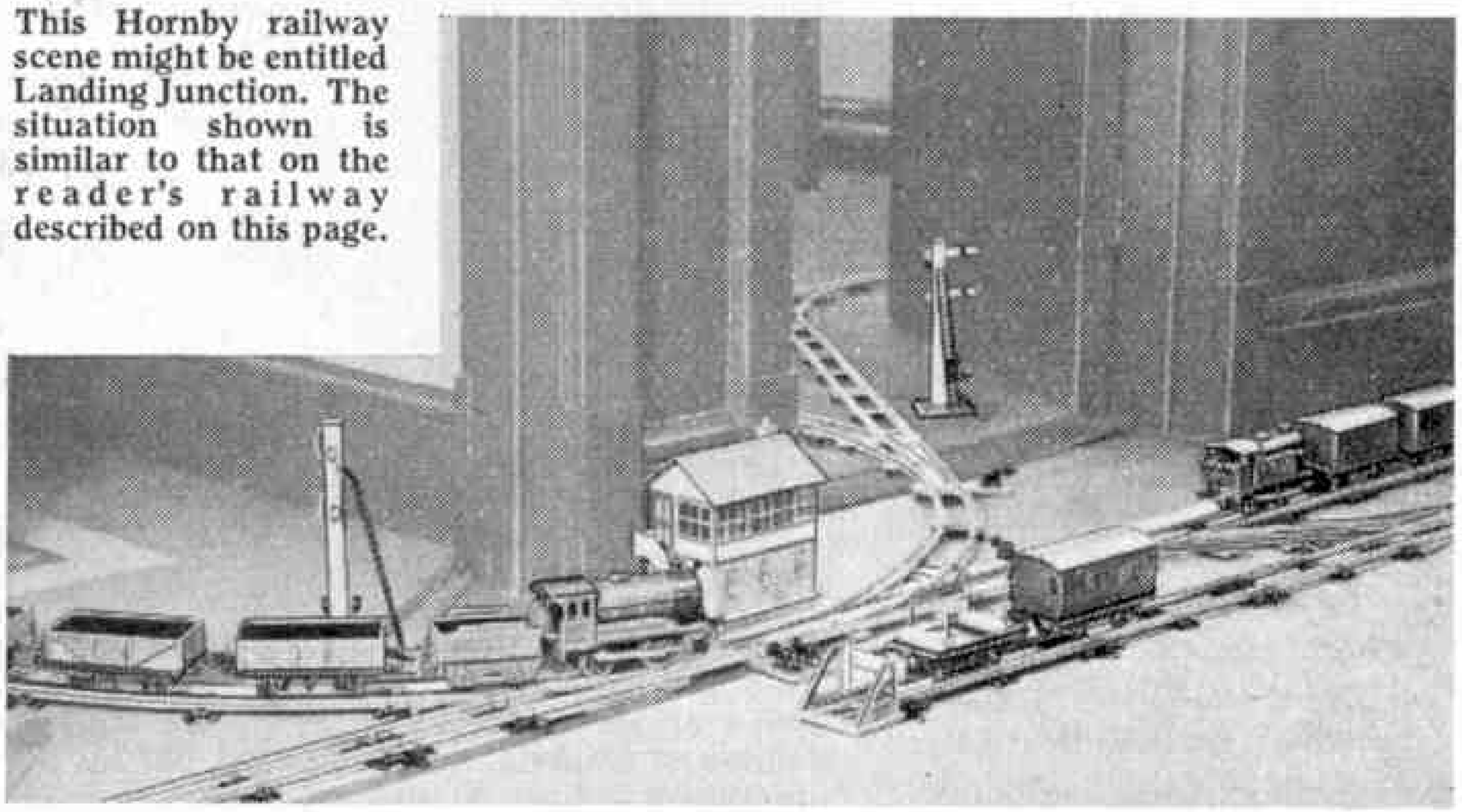


The "there and back" character of the layout described on this page is apparent from this diagram.

A Two-Room Hornby System

NOWADAYS one does not often hear of a Hornby layout that is extensive enough to occupy a couple of rooms. At one time miniature railways on a generous scale were the rule, but in these days the demands of living space make such systems extremely rare. Recently, however, we were pleasantly surprised to receive details of a Hornby layout from *M.M.* reader B. R. Jacques, whose system encircles two adjacent rooms and, in addition, makes use of part of the passage outside. As might be expected, the layout is actually a temporary one, but when it is to be laid down the fortunate owner is allowed to make use of two bedrooms and the very useful adjoining landing.

One of the conditions he has to observe is that no furniture may be moved, but in neither room it is necessary to do much furniture dodging, which is a big advantage. The track burrows beneath the beds, which immediately become long tunnels! Each room contains a similar track, consisting of a single main line approximately square in shape, and at the ends remote from the doors, passing loops are developed by means of Points, a station being situated between these tracks. The room doorways are fortunately adjacent and this allows the track to curve out of one doorway into the other, thus connecting by means of further Points the two main elements of the system.



This Hornby railway scene might be entitled Landing Junction. The situation shown is similar to that on the reader's railway described on this page.

Unfortunately no photographs of the actual layout could be provided, but the layout shown in the illustration here has been specially arranged to explain the situation at what we may call *Landing Junction*. In that case perhaps the Points shown in the respective doorways could be designated *Bedroom No. 1* and *Bedroom No. 2* respectively, as the rooms are marked in this way on the track plan that reader Jacques sent to us.

The track is laid in each direction along the landing, as it is in the picture, to form useful terminal tracks with sidings, where trains can be made up ready for long through journeys and where they can be received after their main line runs are over. The system is worked with Hornby Clockwork engines, and good use is made of Brake and Reverse Rails at suitable points on the line. For instance, there is one such rail in each track at the stations and on the terminal roads on the landing there are several.

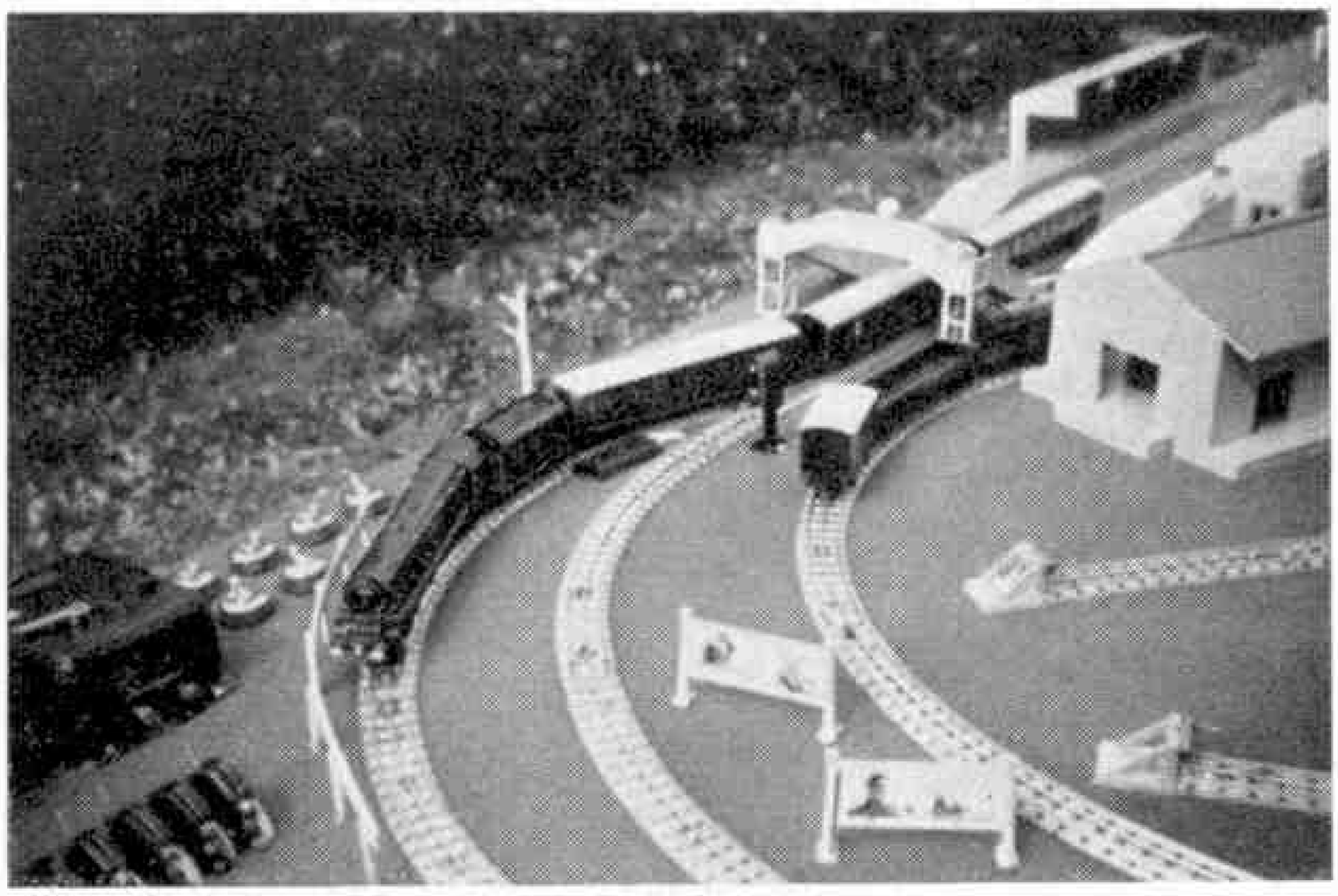
Traffic working is carried out happily by the owner and manager with the aid of his father and sister, who are enlisted as pointsmen in the respective bedrooms. Hornby Clockwork Trains are ideal for this sort of thing and the train running carried out on the layout referred to is a very good example of the success of a properly-planned working scheme. In a typical operating session two trains can be on the move at once with careful management. Naturally the operators must keep a keen eye on the trains and smart work at the Points is essential.

It is a mistake to think that good fun cannot be had on a temporary track that is not very complicated. The basic design of this two-room system is simple and the operating requirements are easily understood by those working the line. Of course, the fairly generous space that is available is an advantage in this respect as the line can be more spread-out than most systems in Gauge 0 and there is plenty of room for the operators themselves to move about, as they must, literally, from point to point.

Busy Times in Hornby-Dublo

OWNERS of Hornby-Dublo layouts, and indeed miniature railwaymen generally, try to reproduce the operations of real practice on their own systems. Now is a strenuous time on real railways, for holiday traffic reaches its peak this month and on the busiest railway system in the world, that of British Railways, becomes very intense. So enthusiastic miniature railway owners too run their own summer services and manage to make their own systems brisker and more active.

This does not mean necessarily that they use their railways more often, but rather that a given operating "session" will see more intensive working. Indeed, owing to outdoor interests and various other attractions, it is often found that some miniature railway owners lessen their train running activities during the summer months, and this is quite understandable. Even then, there are many who like to keep their systems working more or less at full pressure all the time. This can readily be done, and operations can be conducted with enjoyment in the open air if the layout, complete on its baseboard, can be transported bodily out of doors.



A view across one corner of the Hornby-Dublo layout developed by Mr. G. Simpson of Cambridge, New Zealand, for his boys. The railway is laid on a baseboard and can be used out of doors if necessary, as it is in this picture.

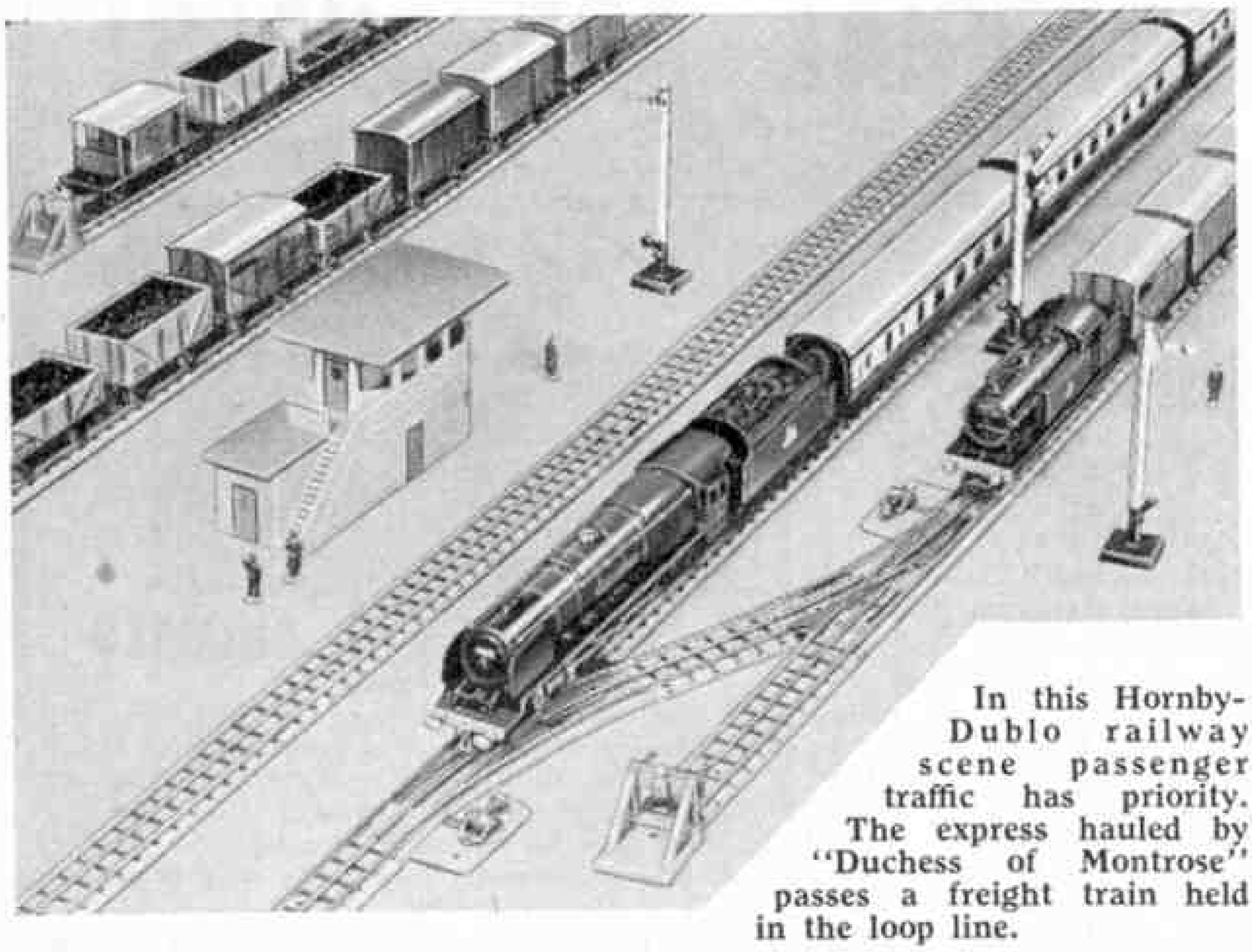
Here on this page is a picture of a system that can be moved about in the manner just suggested. It is not complicated, but it does manage to convey the impression of being busy, with its double track, sidings and its inner return loop.

The railway has been developed by Mr. G. Simpson of Cambridge, New Zealand. Apart from its portable nature, it has various points of interest that we hope to be able to deal with in more detail next month. For the present it will be sufficient to say that the railway is a continuous one with a good capacity for busy and realistic operations.

Not all Dublo owners realise, when developing a scheme of operations, how the Isolating Rails and the new Isolating Switch Points can help them take the fullest advantage of the possibilities of their tracks. Every operator aims to keep traffic moving—especially at this busy time of the year—and even where the system is a fairly simple one with a single Transformer and Controller, movements can be arranged so that train running is not merely a case of each train in turn making its scheduled run.

After all, a passenger express is almost bound to make one or two stops in the course of a journey, otherwise the intermediate stations will have practically no train service, a common complaint on miniature railways! So if it stops alongside the station platform on a section that can be isolated, then the goods or other train that has been waiting can make at least some movements. Perhaps there is a goods train ready to shunt some wagons into the yard; it can detach two or three of them while it has the chance, and then wait for another opportunity when the other train stops again. The "Shunter" indeed has often to consider his next move, and there are Points to be operated, so that the whole shunting operation will not necessarily be a non-stop affair.

Working on these lines, with the successive moves of each train dovetailed into one another, can be quite good fun even in the simpler types of layout.



In this Hornby-Dublo railway scene passenger traffic has priority. The express hauled by "Duchess of Montrose" passes a freight train held in the loop line.

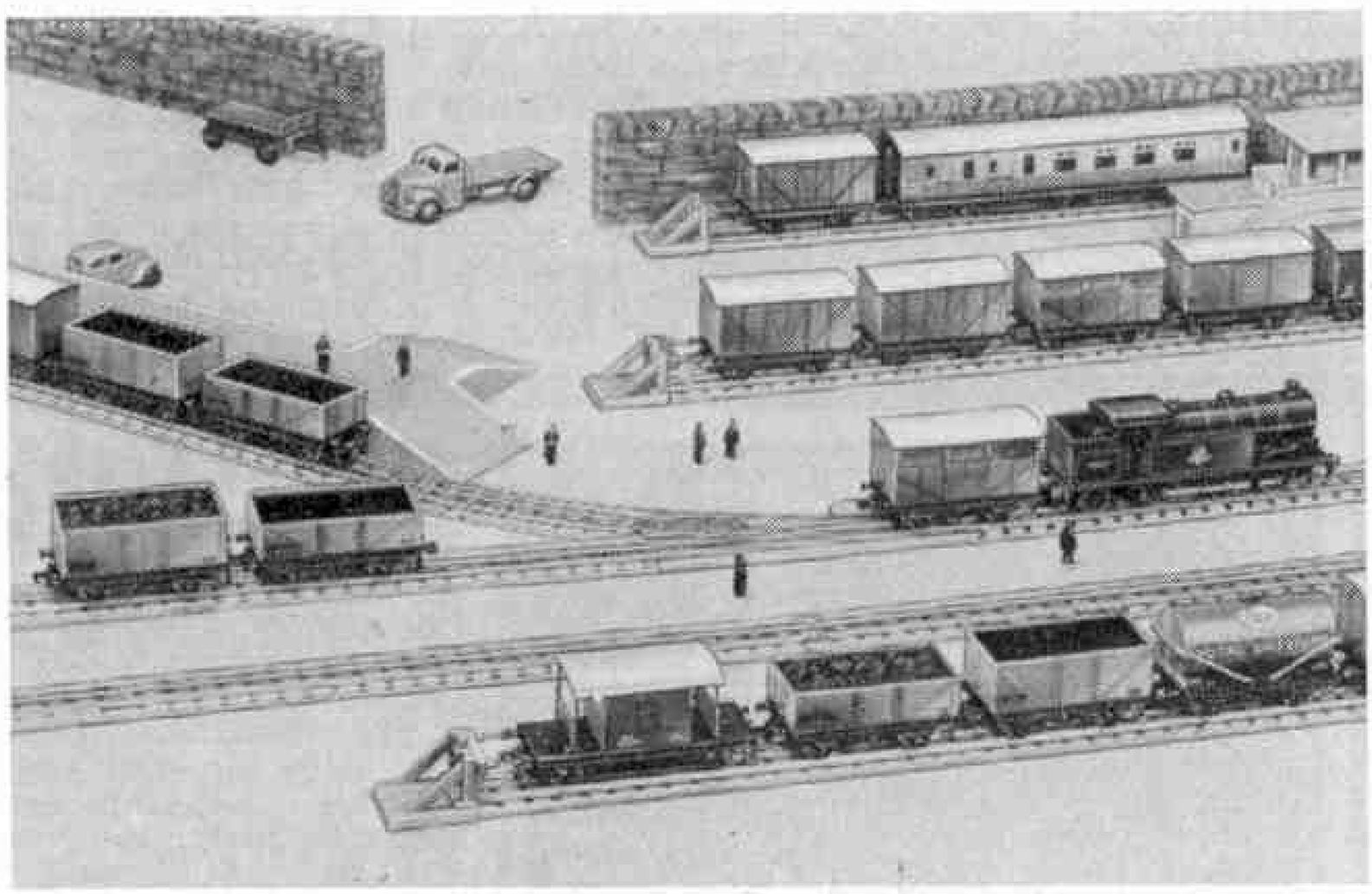
The keen operator, like the competent railwayman, can do wonders with the minimum of equipment.

For smooth working the layout must be "right." In other words, loop lines and sidings must be well placed and unless they can be really long—often a difficulty because of space restrictions—the length of trains must be watched so that they can be safely refuged when required. This is a point that is sometimes neglected, and not always by junior operators. Then difficult situations can develop and traffic may come to a full stop because a goods that is too long cannot be side-tracked to allow an express to pass it. So work out the number of goods vehicles that your loop will hold, making allowance of course for the engine and Brake Van. In a similar manner the capacity of a loop or a siding in terms of passenger Coaches can also be noted by the operator with advantage. If a goods train includes a mixture of bogie and four-wheeled Wagons, then the operator will have to adjust matters accordingly.

In determining the capacity of sidings or other roads you should always aim at storing the trains neatly away, with the engine well clear of the Points and inside the isolating arrangements. The latter is of particular importance where Isolating Rails are in use. Where the Isolating Switch Points are employed, isolation is automatic according to the setting of the switch rails and all we need worry about is that the engine should be nicely clear of the Points.

The sort of thing I mean is shown in the upper picture on this page. A goods train is held in a loop line until an express train has gone by. Of course passenger traffic usually ranks as the more important so that the situation shown will be a typical one.

Whatever the type of vehicles we use, however, the Goods Department of any Hornby-Dublo system can show plenty of evidence of being busy. Variety of stock available is a fairly good indication of this, and to the vehicles already well known there have been added two important new ones lately. These are, respectively, the Bogie Bolster Wagon, which is ideal for lengthy loads of timber, poles, and so on, and the Mineral Wagon. Both types are in common use on the railways and we shall have more to say about the use of Hornby-Dublo counterparts in a later issue.



This Hornby-Dublo Tank Locomotive is busy shunting in the Goods Yard. The Dinky Toys motor vehicles add to the realistic bustle of the scene.

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For other Stamp Advertisements see also pages 430 and xvi.

Stamp Collectors' Corner

By F. E. Metcalfe

THE UNITED NATIONS

THE recent opening in London by the United Nations of an office for the sale of postage stamps makes this an opportune moment to consider the stamps that have actually been issued by U.N. itself. These alone would make up a nice little collection, but various countries also have released finely designed stamps in connection with the organisation. As most of these are not costly, perhaps they might be included in the collection with advantage, particularly as they throw light on some of the fruitful activities in which U.N. is engaged.

The beginning of it all was the setting up of a conference in San Francisco in 1945. Hopes of peace ran a good deal higher than now; nevertheless, not to look entirely at the dark side of things, our hopes have risen a good deal higher today than they were a year ago. The charter was signed on 26th June 1945. It came into force on 24th October of the same year, and this date has been fixed as the official one on which to celebrate Founders Day.

The United States issued the first U.N. stamp. Since then a number of countries have emitted stamps in honour of one activity or another of U.N. Among these was Afghanistan, and of course France has given us a number of beautiful and well designed issues. Even Korea in 1950 issued a stamp to commemorate the war efforts. Maybe Koreans who had lost all they had in the war were not quite as enthusiastic about it as those of us who are only seeing the conflagration from afar. This issue actually was followed by a set of 42 stamps that depicted the flags of the countries opposing North Korea. In this there was one notable slip, for two stamps in honour of Italy showed the old flag of the Kingdom; later another pair were issued showing the Republican flag.

Bolivia, Turkey, Thailand, Brazil, Liberia and the Philippines have all issued U.N. stamps, but it must be admitted that those of the organisation itself are most worthy of our attention, so I will try and run through them briefly. But before I do so, let me give a word of warning about one issue of so-called U.N. stamps that has never been accepted by the catalogues. The country concerned was the so-called South Moluccas, which tried to break adrift from Indonesia. It was an interesting little set of three values, but it has not been accepted as an official postal issue.

Now for details of the stamps issued by U.N. itself. These are obtainable in London at face value, and just in case you want to buy, I had better give the rates at which they can be bought: 1c.–1d., 1½c.–1½d., 2c.–2d., 3c.–3d., 5c.–5d., 6c.–6d., 10c.–9d., 15c.–1/1, 20c.–1/6, 25c–1/10, 50c.–3/7 and 1 dollar–7/2.

It was on 16th November 1950, at the Fifth Session of the General Assembly, that the United Nations Postal Administration was set up, and it was decided to use U.N. stamps. Those concerned made no bones about the object for which the stamps were issued, for as they said, these would be dispatched to the four corners of the Earth and would thus create interest in U.N. activities. This interest would be stimulated by philatelists, who would collect, exchange and discuss the stamps.

The first stamps appeared on 24th October 1951. Great Britain had a hand in the designs as well as the printing, for the British firm of Messrs. De La Rue was responsible for the 1c., 3c., and 25c. of the first release and the 10c., 15c., and 20c., which followed on 16th November. Quickly after this the same firm produced three air mail stamps, 5c., 6c., and 10c., and a pair, 15c. and 25c., of ordinary stamps. These last named are of what is known as the *Swallow and Emblem* design.

Other stamps were printed by Messrs. J. Enschede and Sons, Haarlem, Holland, and British, Danish, Dutch, and Mexican designers all had a hand in the designs. I have heard them described as synthetic, in some way having the appearance of belonging to no country, and to be quite candid that is rather how I feel about them. But that they are colourful and attractive no one can deny.

The first commemorative stamp appeared on 24th October 1952. This shows the Veterans' War Memorial Buildings, San Francisco, where the Charter was signed in 1945. Soon followed other stamps designed and printed in Great Britain. These were 3c. and 5c. values, and their object was to commemorate the adoption by the General Assembly on 10th December 1948 of the Universal Declaration of Human Rights. So U.N. had thoroughly got going in the philatelic field.

And now we come to 1953. We are illustrating a rather peculiar stamp that is one of two issued on 24th April. Mr. Olav Mathiesen, of Denmark, was the designer, and our friends Messrs. De La Rue again the printers. The stamps were to commemorate the work of U.N. for refugees. The last stamps to date were issued on 12th June to symbolise the world-wide activities of the Universal Postal Union. The values concerned were 3c. and 5c. Mr. H. Woyty-Wimmer of Great Britain was the designer—actually the design won second prize in an international competition—and Messrs. De La Rues were the printers.

Postal stationery is very popular today and U.N. have also issued a post-card, an air-letter and an embossed envelope. Just to complete the picture two more commemorative stamps will be issued before the end of this year. It will be seen there are not many stamps to go after but all are interesting.

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For other Stamp Advertisements see also pages 428 and xvi.

Stamp Gossip

INDIA'S RAILWAY CENTENARY

I SUPPOSE that stamps with designs connected with railways run a good second to ship stamps, which are the most popular of all with the hundreds of thousands of thematic collectors spread all over the world. This being the case, the 2a. black stamp issued by India in April was bound to be a winner, and so it has proved. Fortunately a copy, either mint or used, only costs a copper or two, so no one is barred financially from buying one.

Here a word about the low face value may not be out of place. It is only comparatively recently that India installed new and probably expensive machinery for the printing of stamps. It was feared then that a lot of stamps might be issued to justify so much expenditure, as had occurred in a number of countries, but here we have such an important event as the Railway Centenary commemorated by a 2½d. stamp. Well done, India! Collectors are sure to be very pleased at such restraint, and the present popularity of Indian stamps is likely to be maintained at least.

JERUSALEM

Here is surely a magic name, and it can be represented in our albums if we collect Israel stamps. I suppose that no country today is producing more colourful or better designed issues than the territory we once called Palestine. While it was under British mandate the stamps were rather dull, but since the name was altered to Israel there has been a tremendous change.

Recently I saw a collection fully written up, and how interesting it was! For instance, let us examine the stamp illustrated. It shows the city of Jerusalem. Note the Tower of David in the centre and the three roads leading to the citadel. One is the old road built during the first World War. A new road was built to help in the lifting of the Jerusalem siege during the war for liberation. The work was done at night, and then the third "Road of Valor" was hacked out and dedicated to those who lost their lives in that war.

That's part of the story that one stamp can tell, and there are many others just as exciting. One point worth noting—quite a respectable number of Israel stamps can be gathered for a very small sum.

ROAD SAFETY

The problem of road accidents is of world-wide importance, but it has been left to Germany to harness the great publicity value of stamps in an attempt to draw people's attention to the necessity for more care on the roads by everyone. The stamp illustrated shows a tragic picture, and many thousands will see copies, and ponder over what they see. Surely the idea is so good that other countries may also issue stamps in an attempt to draw people's attention to the pressing need for more road safety, which is just another way of saying *more thought by all for others.*

This question of publicity by postage stamps is a very interesting one. Recently Australia issued six stamps to draw the attention of the public to the necessity for increasing food production. Immediately ill-considered remarks were made in print about not only the poorness of the designs, but the ethics of the issue as well, as if the Government of Australia would be in the least interested in the few thousands of pounds that collectors might provide from their purchases of these "Produce More Food" stamps.

HAUTE COUTURE

France has produced some of the most beautiful stamps in the world, and it is a great pity that we cannot show the exquisite colours of the French stamp illustrated. There are many lady collectors today, and it is pretty certain that this new 30f. stamp of France will interest them as few other stamps have done. And such is the beauty of the design that surely others also will take pleasure in France's latest philatelic effort.

COMMEMORATIVES

We have now had time to digest thoroughly the philatelic fare provided for us in honour of the Coronation. Whatever we may think of some of the designs, I am sure that all will agree that the issues for the present reign are an improvement on those released in 1937.

Probably Canada's effort has caused the most controversy, but that is often the case with a work of art. I myself feel that the Canadian Post Office has earned the gratidude of lovers of art by producing a design that sets a new standard, a standard moreover that has never been remotely approached, unfortunately, by any who have had a hand in our own commemorative issues.

Recently the City of Liverpool purchased a portrait of the Queen that also caused a good deal of controversy. That Englishman's favourite method of letting off steam, writing letters to the newspapers, was indulged in to the full. A couple of remarks from two of these letters have distinct bearing on the criticism levelled at the Canadian coronation stamp, and I think that by quoting them new light may be thrown on what the Canadian artist was aiming at. One was that "the lack of facial likeness is overshadowed by the dignity of Queenship"; the other—an artist is being quoted—was "I do not paint the likeness, but the character of the person."

I feel sure that I need say no more on this fascinating topic.

British Triumph at Le Mans—(*Cont. from page 394*)

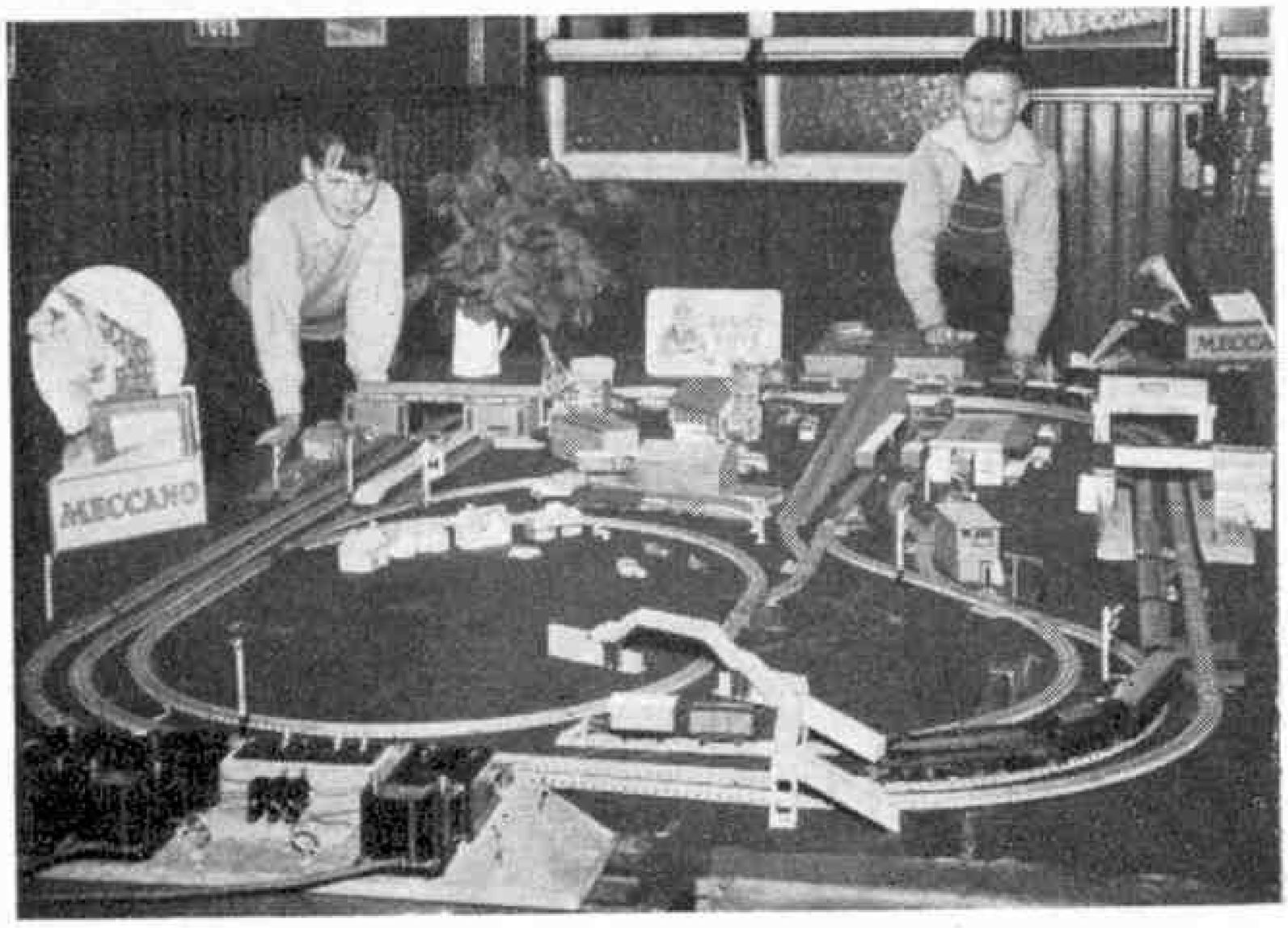
entered Belgian car of Laurent and C. de Tornaco, which had been bought from a showroom only ten days previously.

And so the last few hours passed, with the road from Le Mans jammed with buses and cars bringing thousands to see the finish. At three o'clock the crowds were packed ten deep opposite the pits and there was no room to move in the pit gallery.

We kept our fingers crossed. Twenty minutes to go and the Jaguars might have been on rails, they were going so well.

Fifteen . . . ten . . . five minutes. It was almost too good to be true, and we cheered and waved as the green car from Coventry, with Duncan Hamilton at the wheel, came up from White House and took the chequered flag.

The English commentator was indeed right when he said it was a great achievement for the Anglo-Saxons. Not only were Jaguars 1st, 2nd, 4th, and 9th, with Cunningham 3rd, but the entire Jaguar and Cunningham teams had finished the course, whilst thirty-four cars out of sixty which had started stood silent in the "dead" car park behind the pits.



An effective Hornby-Dublo layout arranged by Mr. G. Wood and his son William in connection with a Coronation Sale at Bolton. William Wood is seen on the left, and he is being assisted in operations by his friend Tony Bess. Photograph by J. Jennings, Bolton.

Meccano Automatic Ticket Machine—

(*Continued from page 419*)

turn in one direction only by a Pawl 7. A long Bolt is screwed into the boss of the Ratchet, and in the locked position this Bolt is vertical. The first action required to open the lock is to turn the wheel 13 ten "clicks" in an anti-clockwise direction. When this move is completed the Bolt has forced a Crank 8 to the right (Fig. 3) and as the Crank engages a Collar on a Rod 9 this Rod also is moved to the right. The Collar is positioned behind the vertical Rod 10 in Fig. 3.

The second wheel 14 is then turned clockwise as far as possible. This wheel is fixed on a Rod that carries a Double Arm Crank 11, and the action of this Crank raises Rod 10 so that its lower end is lifted clear of a hole in the base. It should be noted that this Rod cannot be raised until the Collar on Rod 9 is brought between the jaws of a small Fork Piece 12, and these parts are in line only when the Ratchet is turned to the correct position.

The door can now be opened only about $\frac{1}{8}$", as the Rod 9 catches the door framework. This Rod is released by turning the Ratchet again, when a Compression Spring restores the Rod to its original position. The Collar on Rod 9 does not prevent this operation, as the Fork Piece is now raised and the Collar passes in line with the points of the arms of the Fork Piece at their narrowest sections.

The constructional details of the mechanism can be varied slightly to suit the parts available to the builder, but if built as described here it operates quite smoothly and reliably. The only attention normally required consists in rewinding the Motor, which in Mr. Rivron's original model was necessary after the delivery of about 80 tickets.

There is plenty of scope for models in which an operating mechanism of this type, set in motion by the insertion of a coin, can be included.

Coronation Visitors

The portraits on this page are those of two long-service employees of Meccano Limited who were the guests of the firm in London during Coronation week. On the left is Mr. E. Horrocks, a toolmaker who joined the firm in September 1914, and on the right Miss Margaret Jones, now a press worker, whose service began in the following year.

The veterans were provided with seats in a stand facing the Victoria Monument and Buckingham Palace. Twice they had splendid views of Her Majesty, and throughout Coronation Day itself and during the rest of their stay in London interest never flagged.

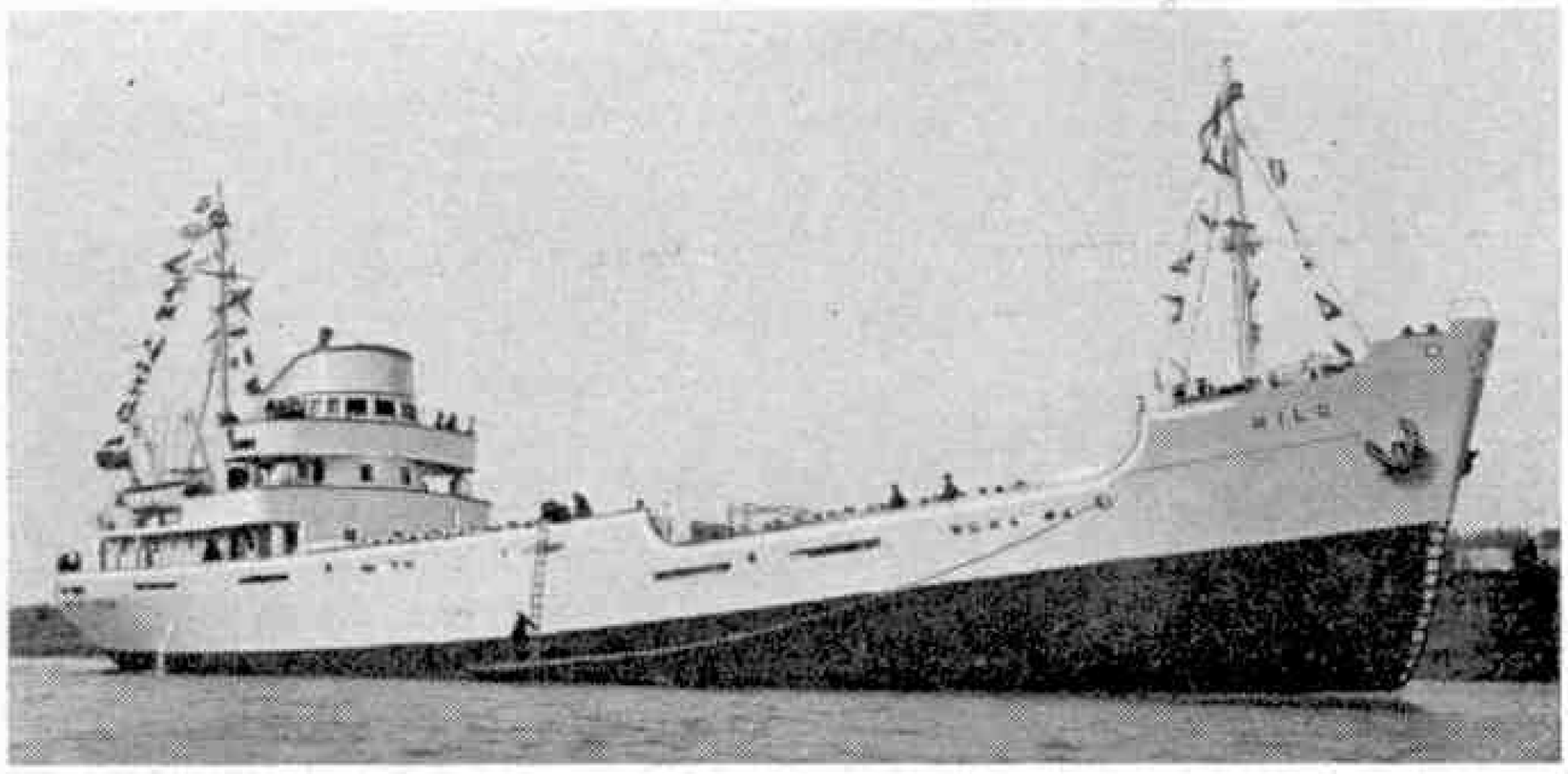
From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

M. V. "Milo"

The upper illustration on this page shows the motor vessel *Milo*, built by Charles Hill and Sons Ltd., of Bristol, for the Bristol Steam Navigation Co. Ltd. The vessel has an overall length of 224 ft. and a gross tonnage of 991. As her regular trade is between terminal ports having excellent cargo handling facilities, her owners have dispensed with the usual cargo derricks and winches, a step that has given the vessel an unusual appearance.

All accommodation for personnel has been arranged aft, and that for the officers in a streamlined superstructure, which also includes the wheelhouse, chartroom, bridge and engine exhausts. The modern appearance of the vessel is further enhanced by a tripod mast aft, carrying wireless aerials, harbour lights, etc. The propelling unit is a single British Polar Engines Ltd. two stroke, single-acting diesel engine developing 960 b.h.p.



M. V. Milo, a modern cargo ship that has no derricks or winches. She was one of the vessels representing the Merchant Navy at the Coronation Naval Review. Photograph by H. A. Breton, Bristol.

The *Milo* is one of the ships that was selected to represent the Merchant Navy at the Coronation Naval Review in June.

H. A. Breton (Bristol).

The railway window in the Church of St. James, Paddington. Photograph by W. F. Bunce, London W.2.

An Unusual Church Window

Not far from the great railway terminus at Paddington is the Church of St. James's, which has recently installed a wonderful stained glass window depicting events and personalities connected with the neighbourhood. There are five modern windows altogether. Three of these show Lord Baden-Powell, the former Chief Scout and founder of the Scout movement, the Peter Pan statue in nearby Kensington Gardens, and Sir Alexander Fleming, the famous scientist and discoverer of penicillin. A fourth is a centre window depicting the church in war-time Britain, complete with air raid warden and overhead searchlights.

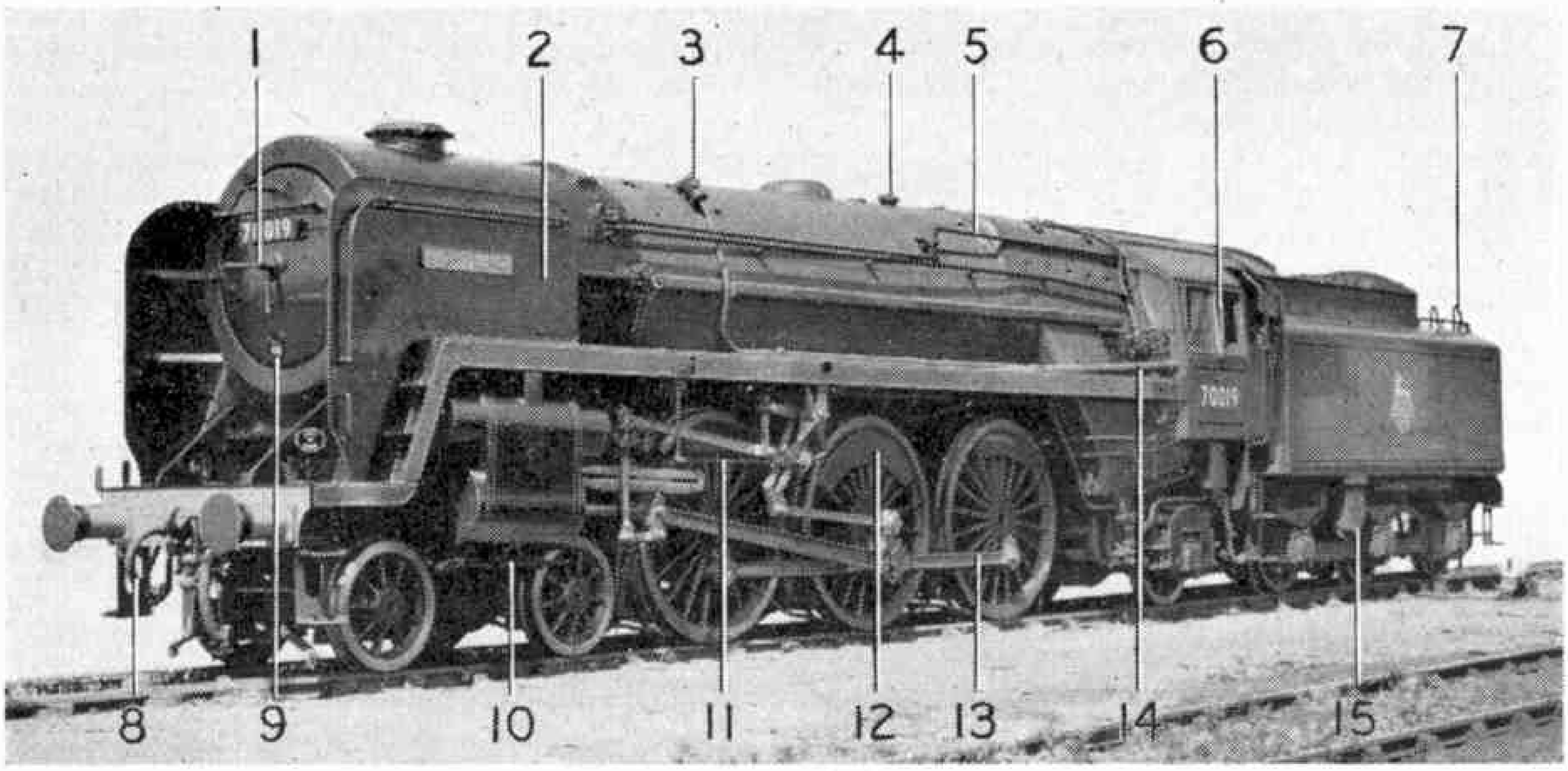
But perhaps the most unusual window is the fifth, which features the railway terminus of Paddington, and shows a departing passenger train.

W. F. Bunce (London W.2)

Competitions! Open To All Readers

Prize-winning entries in M.M. competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

What are these Locomotive Parts?



Here is a nice easy competition, just right for the holiday month. The illustration on this page shows a British Railways Britannia class 4–6–2 locomotive. Some of the working parts and other features have been indicated by numbers, and competitors are asked to say what these are and what they are for.

For instance, No. 1 indicates the handles used for locking the smoke-box door tightly in position. The door must be tight in order to prevent air being drawn into the smoke-box, which results in poor steaming and so impairs the efficiency of the engine and may cause loss of time.

When a competitor is satisfied that he has identified all the parts he should make up a list of them in numerical order, adding a note as to their purpose. Use one side of the paper only—and do not forget to add your name, age and full address!

The Competition will be divided into two sections, for Home and Overseas readers respectively, and in each section there will be prizes to the value of 21/–, 15/– and 10/6, together with a number of consolation prizes. If there is a tie for any prize the judges will take neatness and originality into consideration. Envelopes containing entries should be addressed *August Locomotive Contest, Meccano Magazine, Binns Road, Old Swan, Liverpool 13.* The closing dates are: Home, 30th September, Overseas, 31st December.

Holiday Drawing Contest

Thousands of readers will be on holiday this month, some fortunate enough to be travelling abroad, others at the seaside or in the country, or perhaps discovering that even a holiday at home can be very enjoyable and provide many opportunities for fun. In this competition we invite readers to submit drawings illustrating anything of special interest that they saw or which happened to them during their holiday. Any kind of drawing may be submitted, whether in black and white or in colour, but competitors must bear in mind that it is the drawing itself and not the use of colour that the judges will take into account in assessing the entries.

There will be the usual two sections in this competition, one for Home readers and the other for those living Overseas. In each section there will be two classes, one for competitors of 12 years of age or over, and the other for those under 12, so that younger readers of the *M.M.* need not hesitate to send in entries. In each of the four divisions of the contest prizes of 21/–, 15/– and 10/6 will be awarded for the best entries in order of merit, and in addition there will be consolation prizes for other good efforts. Every competitor should take care to put his name, address and age on the back of each entry.

Entries must be addressed *Holiday Drawing Contest, Meccano Magazine, Binns Road, Liverpool 13.* The closing dates are: Home, 30th September, Overseas, 31st December.

August Photographic Contest

The eighth of our 1953 series of photographic contests is a general one in which we invite readers to submit prints of any subject. Each competitor may submit only one photograph, which must have been taken by him, and on the back of his print must be stated exactly what the photograph represents, also his age must be given.

The competition will be in two sections, A for readers aged 16 and over, and B for those under 16. Each competitor must state in which section his photograph is entered. There will be separate Overseas Sections, and in each section prizes of 21/–, 15/– and 10/6 will be awarded. Entries should be addressed: *August Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13.* Closing dates: Home Section, 31st August; Overseas Section, 30th November, 1953.

Competitors who desire their entries to be returned should note the paragraph at the top of this page.

Fireside Fun

"Tell the manager I want him," said an irate customer in a restaurant after trying for over ten minutes to attract the attention of a waitress. "I've got a complaint."

"Sorry, sir, this is a restaurant, not a hospital."

* * * *

"I can't understand how you get your work done so well and so quickly, Sambo."

"Easy, boss. I jes' sticks de match of energy in de fuse of enthusiasm, an' it all jes' natchally explodes."

* * * *

"Our cat is bigger in the dark than in daylight."

"Nonsense. It can't be."

"It is. We let it out at night and take it in in the morning."

* * * *

"Is a quire of paper one of those rolls you put in a player piano?"

"Ha, ha, that's good. It must be, and I will tell you something else equally musical. Harmonising is what you put on cakes."

* * *

"Tommy, you haven't given your goldfish fresh water. You know I told you to do it."

"But, mother, they haven't drunk all the old water yet."

* * *

"The doctor says I shall be cured if I just eat what a child of three does."

"Well, that's worth trying."

"Yes, but I don't look forward to eating a handful of mud and small coal and a lot of dust, and washing it down with a drink of ink."

* * *

"First return, quick."

"Where to, sir?"

"Why, here, of course. Hurry up."

* * * *

"How does the telephone work, Mutt?"

"You don't know that, Biff? Listen. If you had a dog so long its head was in Manchester while its tail was still here in London, an' you trod on its tail, it would bark in Manchester, wouldn't it?"

"That's right, Mutt."

"Well, Biff, the telephone works just the same, except that the dog's imaginary."

* * * *

Foreman: "Do you think you are really fit for hard labour?"

Applicant: "Some of the best judges in the country have thought so."

* * * *

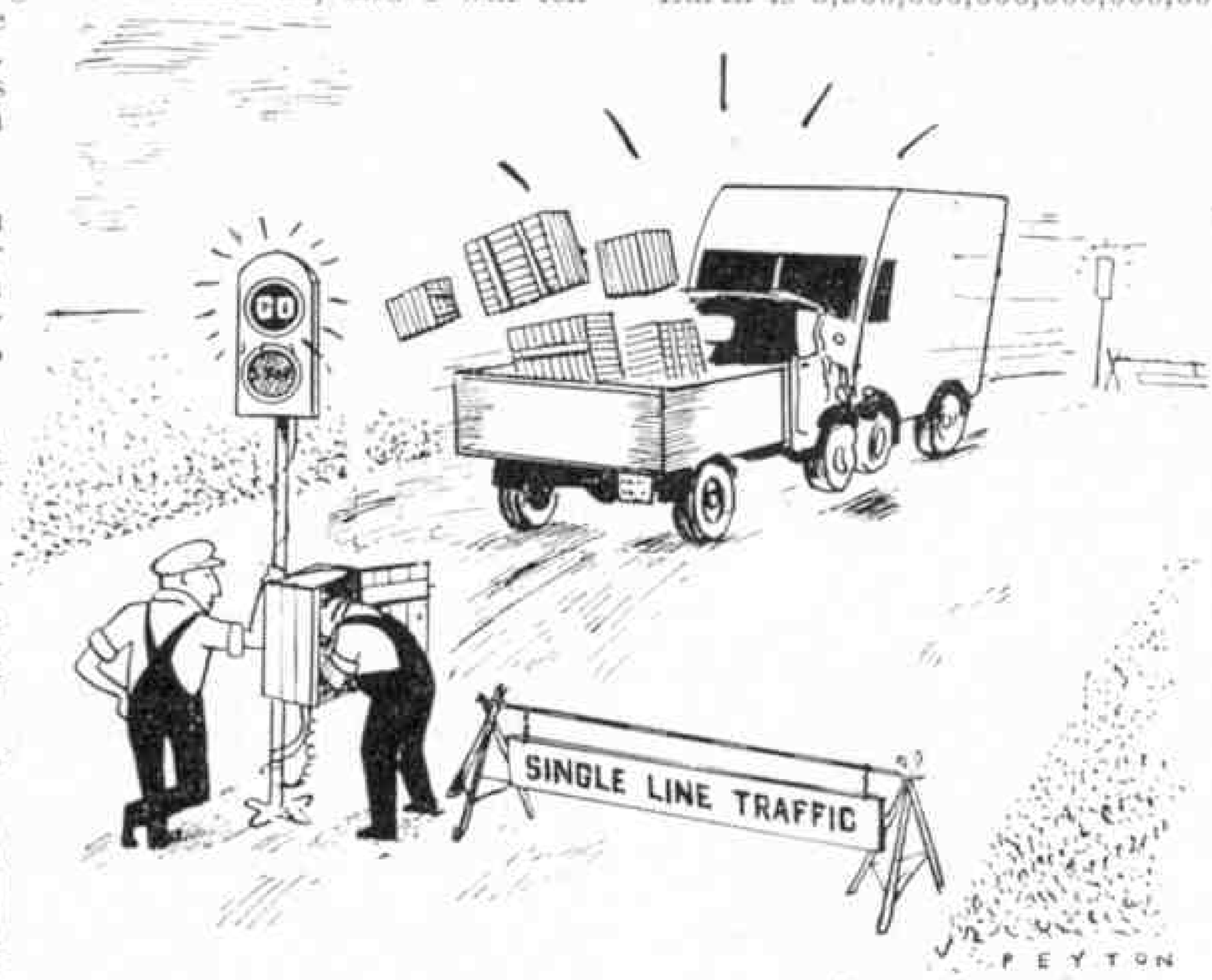
"Hi, boy, am I all right for the Zoo?"

"You look all right to me, mister, but I don't run the place you know."

* * * *

"Old Smith is getting clumsy, isn't he?"

"Yes, he can't even try on a new shoe without putting his foot into it."



"It's still not working, Alf."

(Reproduced by courtesy of The Commercial Motor.)

BRAIN TEASERS

LETTERS TO FIGURES

Here is an unusual division sum in which all the figures are represented by letters. Although not apparent at first, there are a sufficient number of clues to point the way to restoring the original division sum itself, that is to finding the numbers that must be substituted for the letters. Can you do this?

```
B C ) T N A G ( K C M
      M T
      -----
        F A
        C A
        ---
      B G G
        A B
        ---
          A
```

* * * *

A WEIGHTY PROBLEM

Here is an interesting calculation. The weight of the Earth is 5,900,000,000,000,000,000,000 tons. Suppose that after a gigantic world war of the future the inhabitants of the Northern Hemisphere build a wall along the Equator to keep out those living in the rest of the world, and that they make the wall 10 ft. high and 6 ft. thick with stones weighing 160 lb. to the cubic foot. What would the total weight of the Earth be then?

This is a nice bit of calculation for those who love figures!

S.W.C.

* * *

MORE FIGURING

An army column on the march occupies 10 miles of road and marches 10 miles in a day. A despatch rider who covers 20 miles in the same time sets off from the rear of the column as it begins its march. How long will it take him to reach its head?

E.B.P.

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

Here are the seven words of our first puzzle last month re-arranged to show the names of the three flowers asked for.

```
C A P I T A L
O N E N E S S
W E T H E R S
S M U D G E D
L O N G I N G
I N I T I A L
P E A C O C K
```

The final word in our second puzzle was BOASTER, and one way of approach is through the words BE, BET, BEST, BEAST and BREAST.

The sentence represented by figures in our third puzzle last month was:

I SAW THAT I WAS A LITTLE LATE

A CAREER AT SEA

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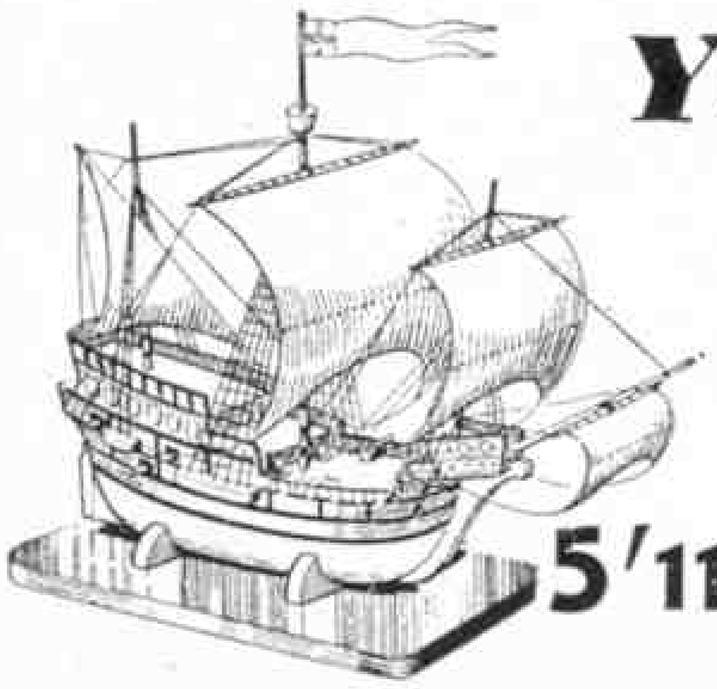

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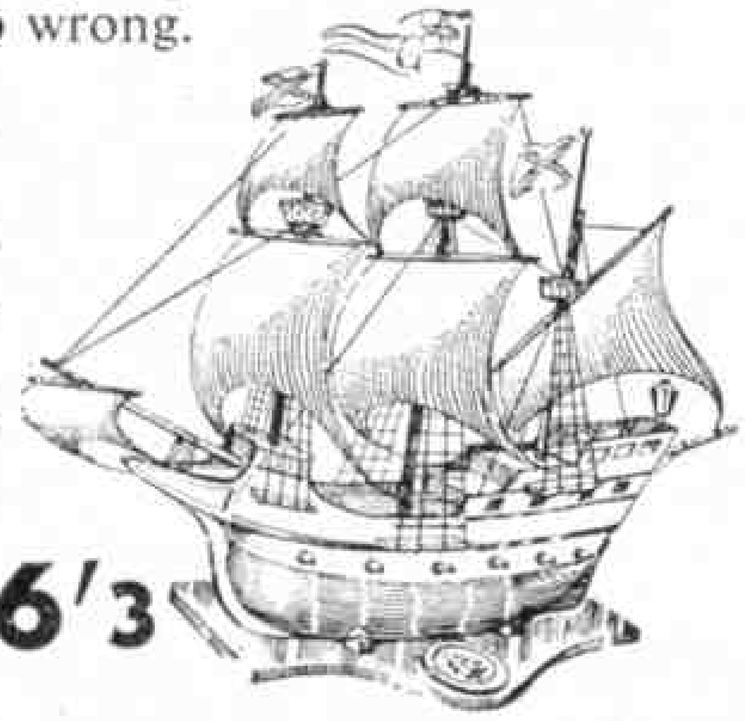

THE ½d. GALLEON
Kit No. 2778

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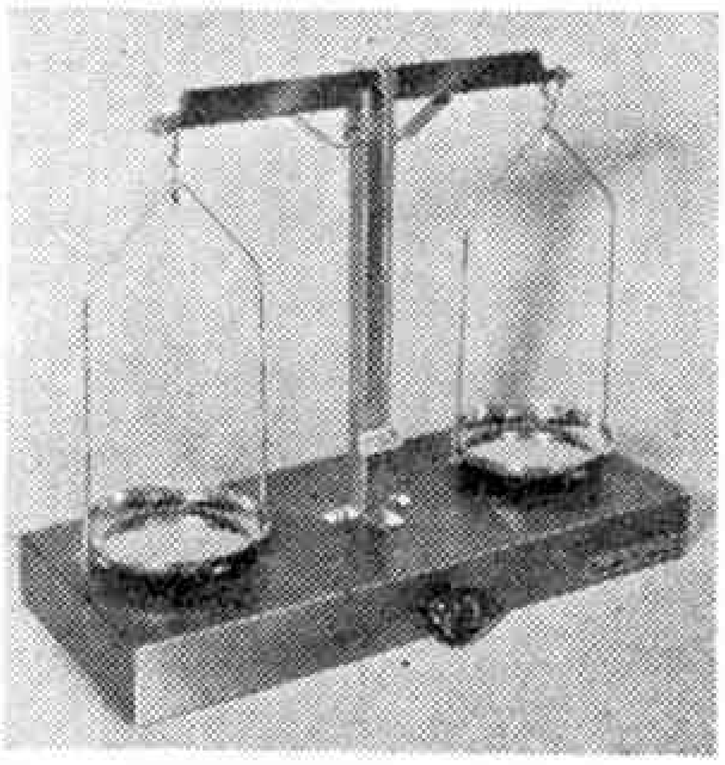

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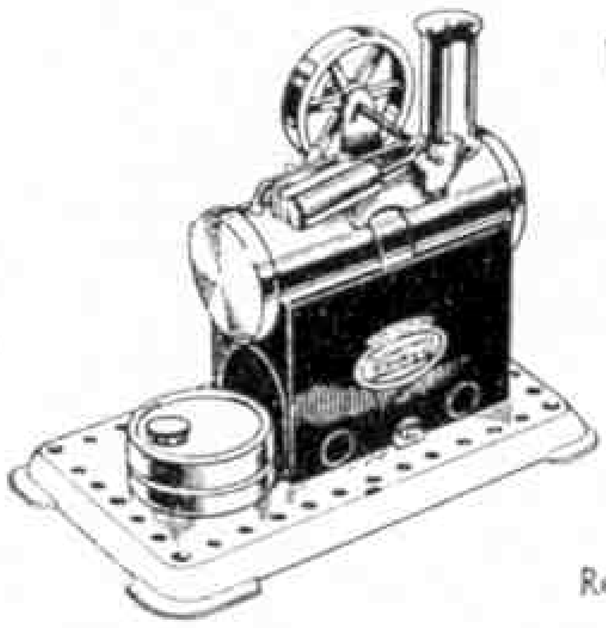

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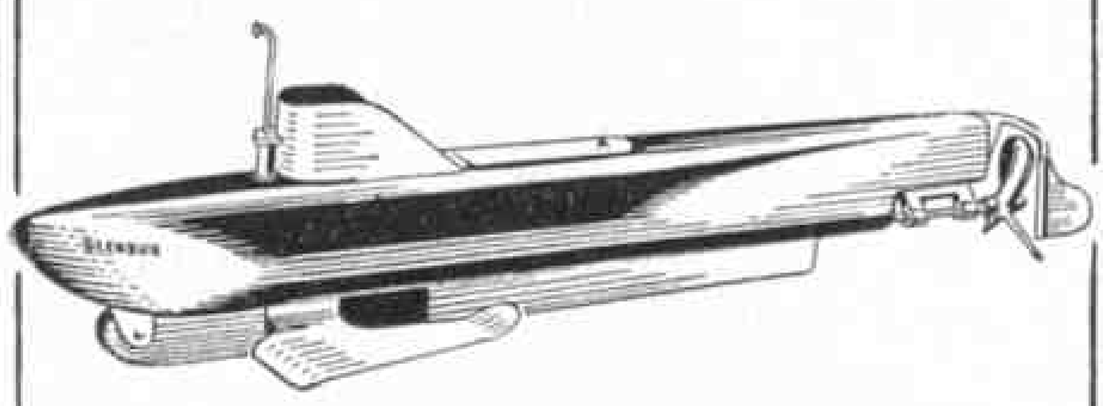

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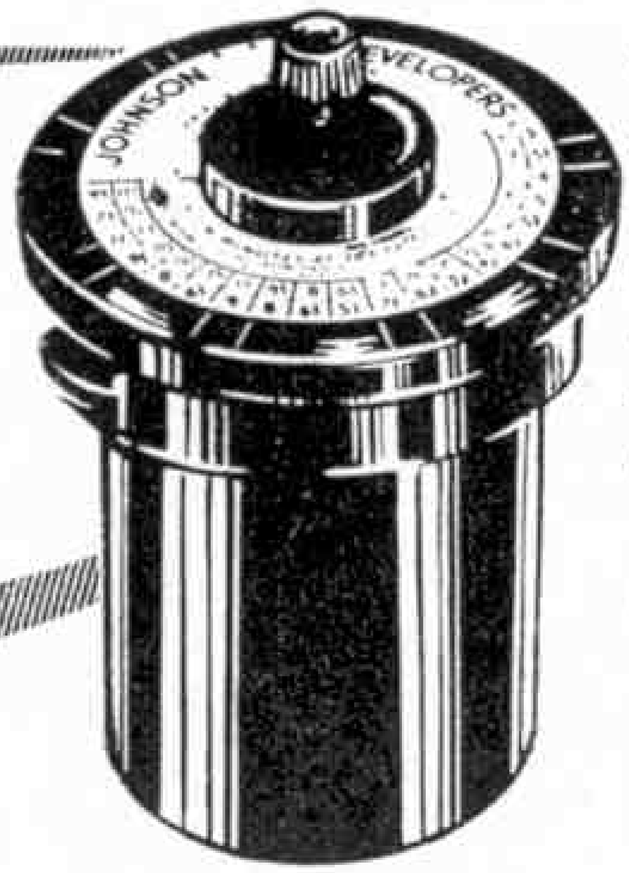

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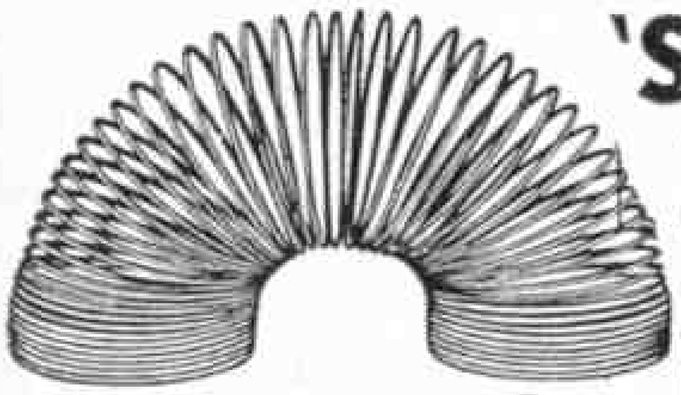

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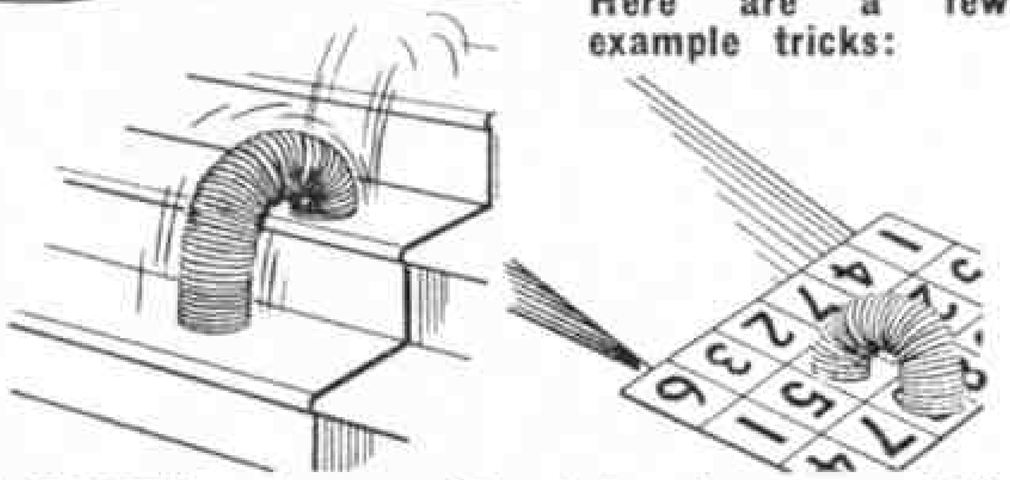

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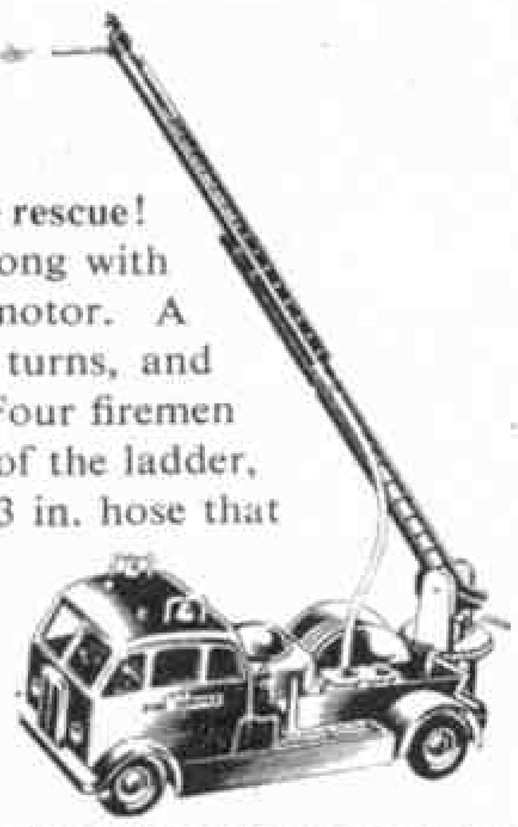

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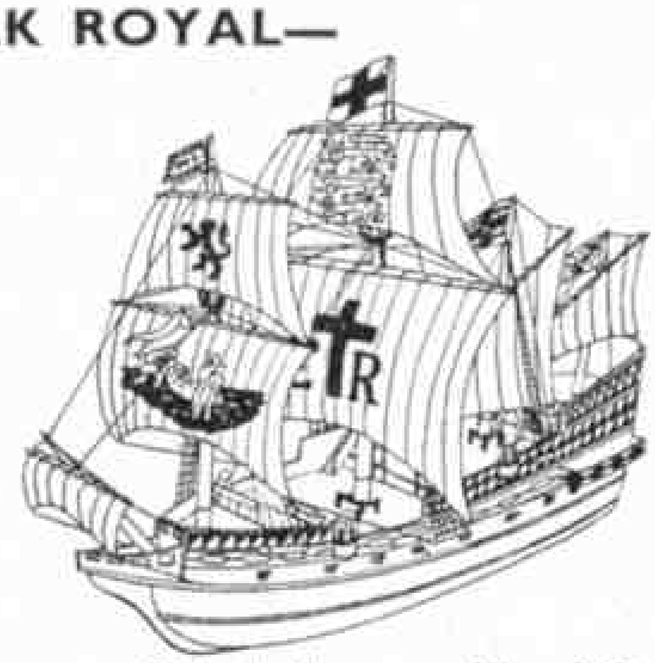

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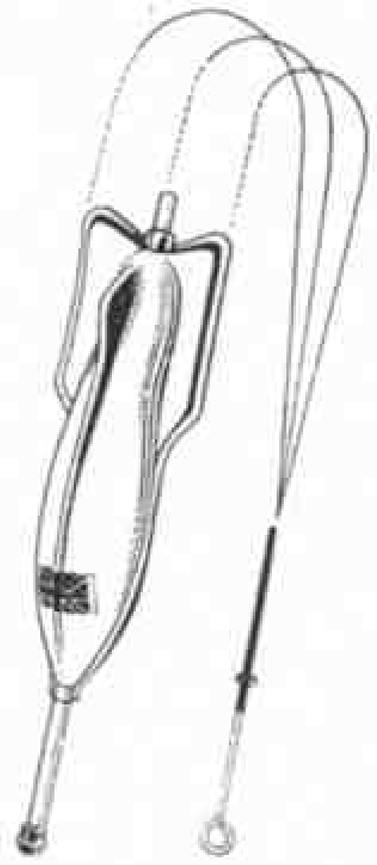

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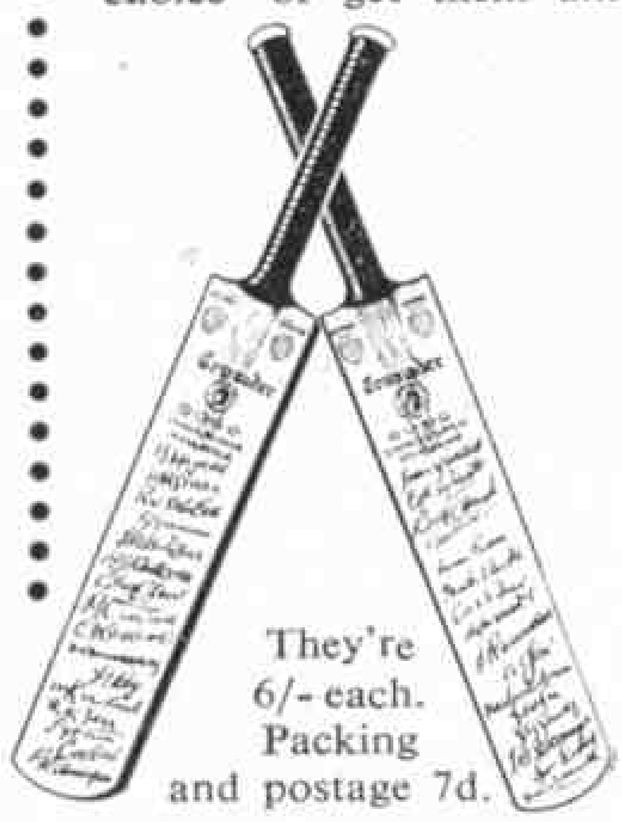

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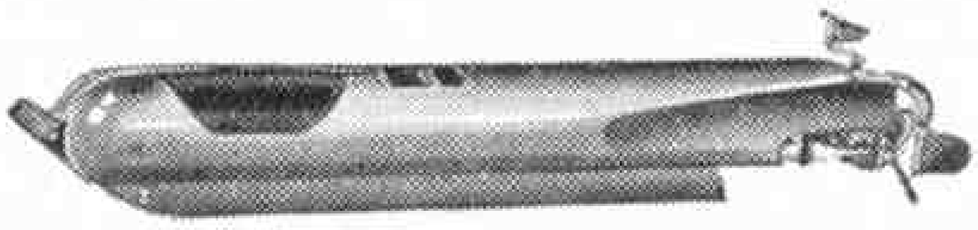

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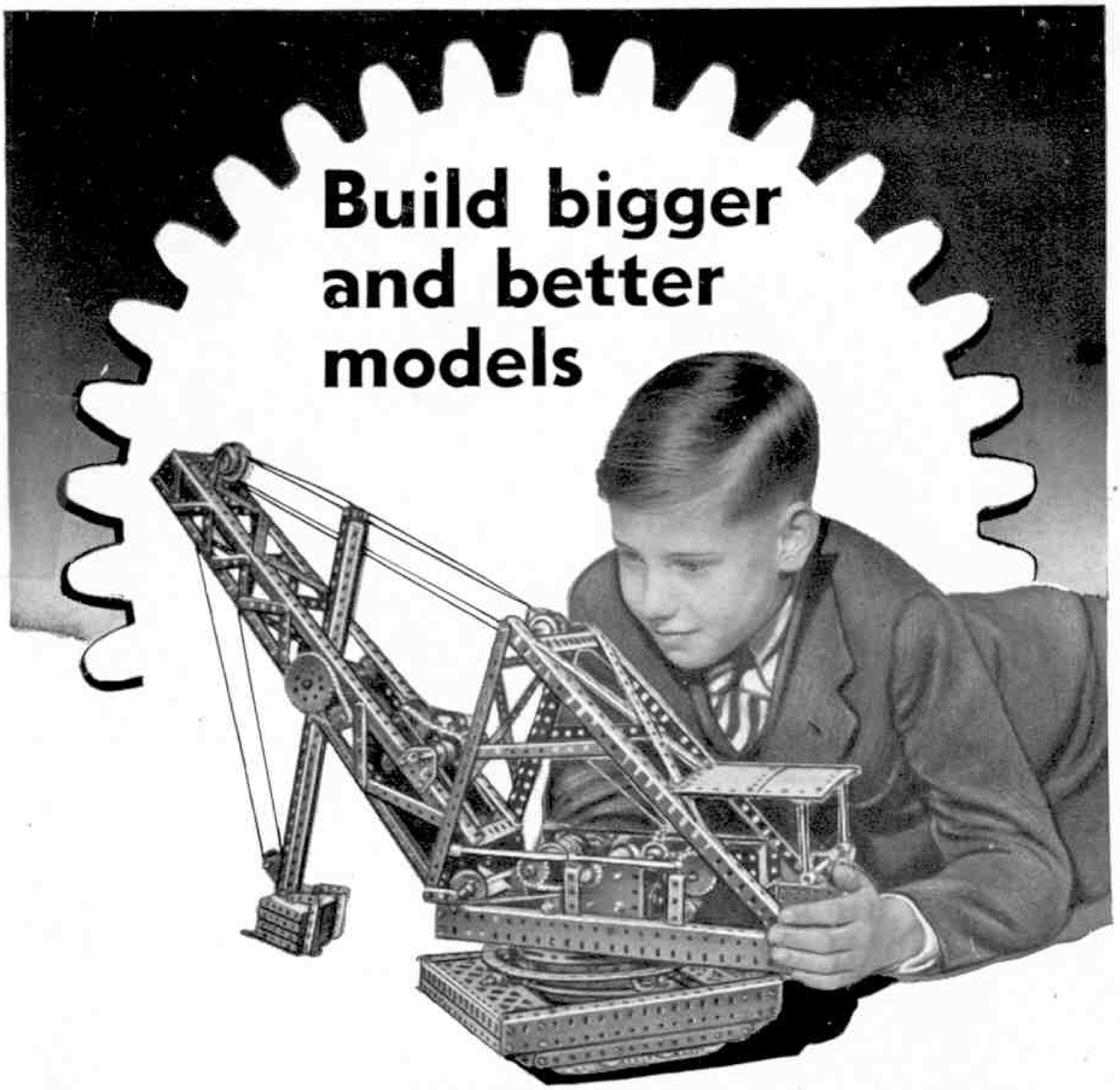
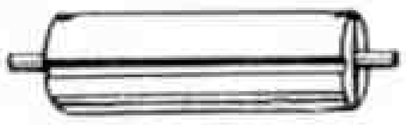


The fascinating Meccano hobby becomes more and more fun as you add spare parts to extend the model-building possibilities. Ask your dealer for an illustrated price list of Meccano parts.

MECCANO

RECENTLY RE-INTRODUCED MECCANO PARTS

138
Ship's Funnel
each 1/2



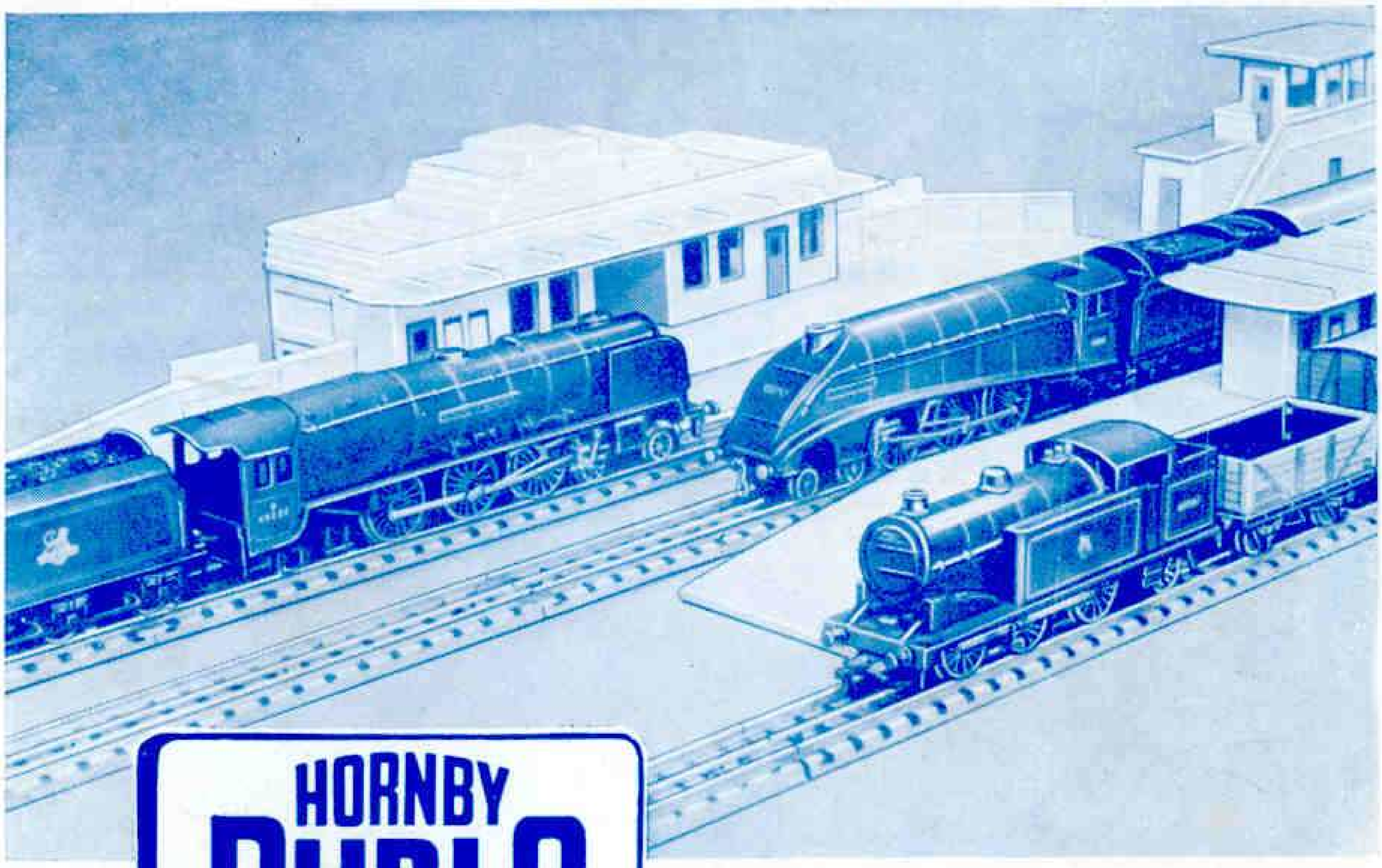
106
Wood Roller
each 1/9

122
Loaded Sack
each 3d.

101
Heald for Loom
doz. 9d.

153
Triple
Pulley Block
each 2/-

These prices include Purchase Tax

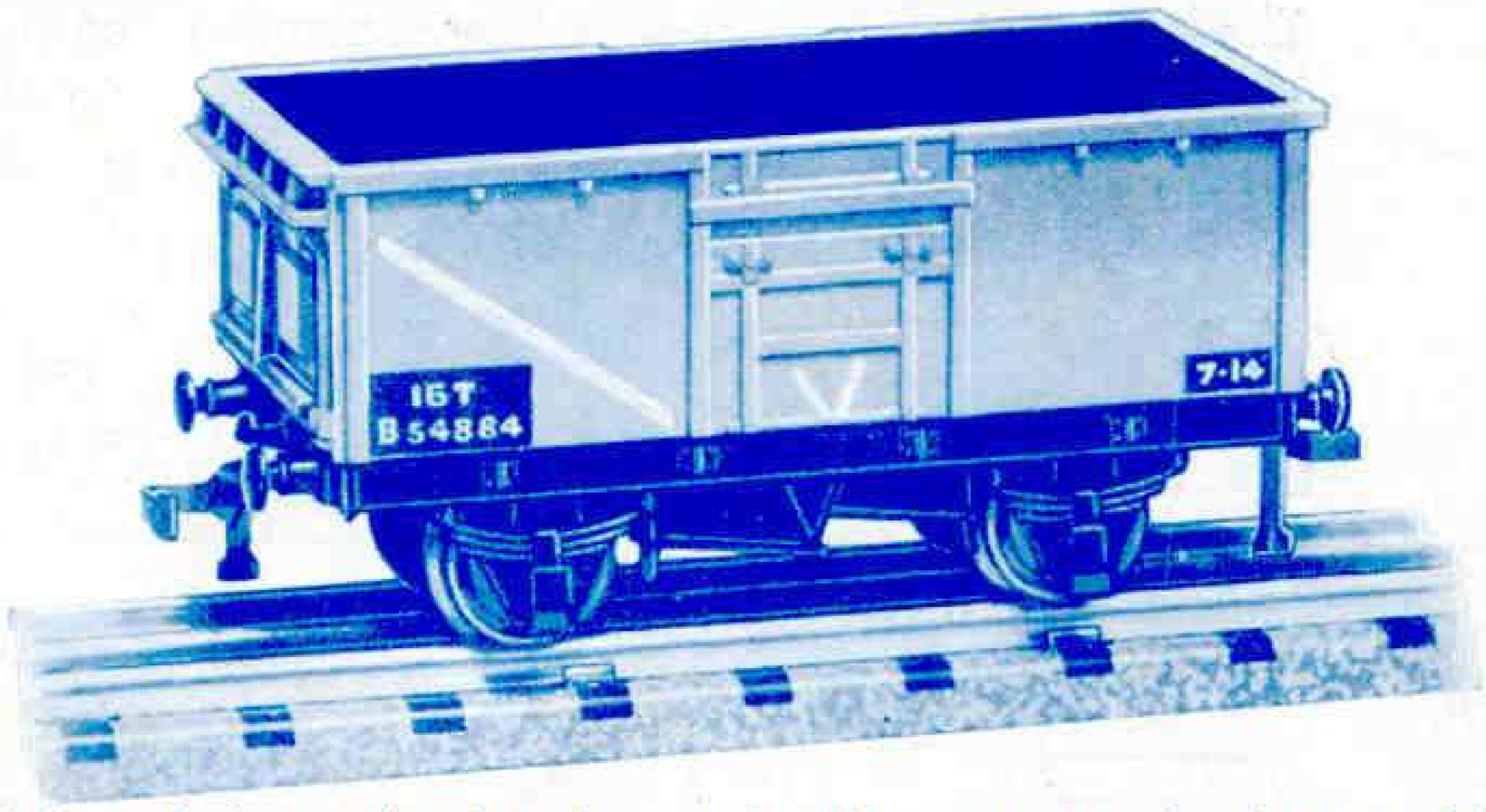


HORNBY DUBLO
ELECTRIC TRAINS

NEW

A variety of rolling-stock adds interest and realism to a model railway, and owners of Hornby-Dublo equipment will learn with special pleasure that several new items are on the way. This month, we are able to announce the introduction of the Hornby-Dublo Mineral Wagon. This is a finely-detailed model of a 16-ton vehicle in common use on British Railways for carrying coal, minerals and other rough loads.

HORNBY-DUBLO MINERAL WAGON D2



Solid die-cast body, as well as base. Strong and rigid, assuring years of good service. Following B.R. practice, this model is finished in light grey and black. **Price 4/11** (including Purchase Tax)

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